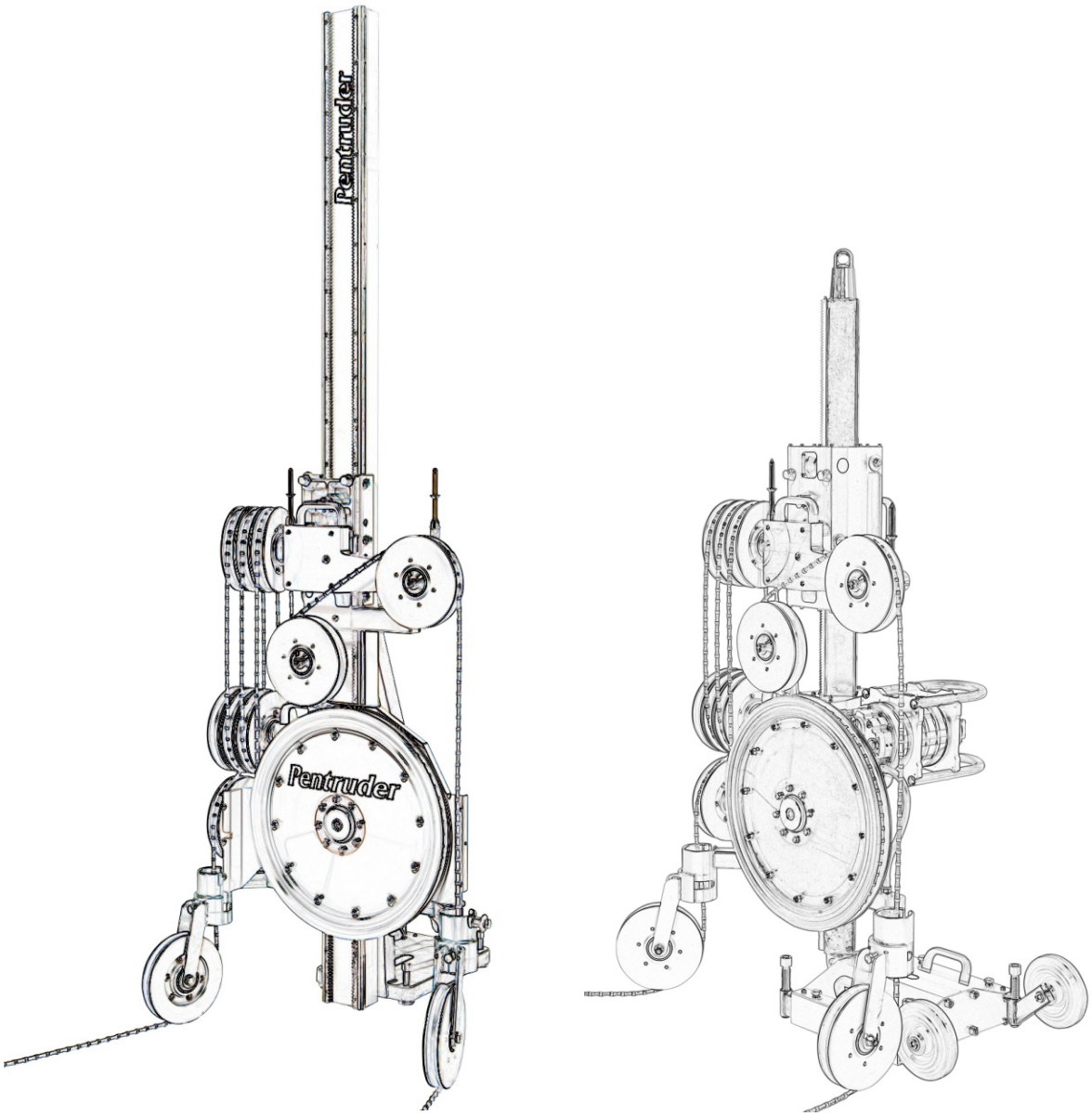
Operator's manual

Pentruder® 3P8 High frequency wire saw and Pentpak® High frequency power pack



Pentruder®

Concrete Cutting Systems

Operator's manual for Pentruder® 3P8 High Frequency Wire Saw and Pentpak® high frequency power pack

Version: 4 Date: 2015-09-16
Support & Service document
Original instructions

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Contents

1 Introduction ... 3
1.1 Validity of this operator's manual ... 3
2 Description of the machine ... 4
2.1 List of complete machine ... 4
2.2 Signs and data plates on the machine ... 5
2.3 Modules 3P8 ... 6
2.4 Rig for 3P8 wire saw with 70 mm column system ... 8
2.5 Rig for 3P8 wire saw with saw track (MCCS) ... 10
2.6 Pentpak high frequency (HF-)power pack with Cable remote control ... 12
2.7 Drive motor and slip clutch ... 13
2.8 Wire storage principle ... 13
3 Safety instructions ... 14
3.1 Safety instructions which are used in this operator's manual ... 14
3.2 Intended use of the machine ... 14
3.3 General safety instructions ... 15
3.4 Safety precautions at site ... 16
4 Preparations and mounting ... 21
4.1 Advice about the positioning of the Pentruder 3P8 wire saw ... 21
4.2 Mounting the base plate ... 21
4.3 Mounting 3P8 HF-wire saw with 70 mm column system ... 21
4.4 Mounting 3P8 HF-wire saw with with TS track (MCCS) ... 27
4.5 Mounting the 3P8 wire saw modules ... 32
4.6 Assembly of HF-motor, cords and hoses ... 34
4.7 Attach guards ... 35
4.8 Preparing the power pack ... 36
5 Cutting ... 41
5.1 Preparations before starting to cut ... 41
5.2 Starting the HF-machine ... 42
6 Troubleshooting ... 49
6.1 Check list ... 49
6.2 LED type warning lights on the power pack ... 50
7 Maintenance ... 53
7.1 Every day / week maintenance ... 53
7.2 Maintenance which should be performed by Pentruder authorized technician ... 55
7.3 Transport and storage of the machine ... 55
8 Technical Data Pentruder Modular Rig System ... 57
Declaration of conformity ... 60
Technical Director ... 60
Installation Certificate ... 61

Appendix for Wireless Remote Control: Hectronic User's Manual

1 Introduction

Thank you very much for your confidence in our product! You have chosen to invest in a product which will give you many years of efficient and profitable production. The Pentruder 3P8 HF-wire saw has been developed based on over 30 years of experience in this specialized field. With correct handling it offers outstanding performance, safety and reliability.

It is essential that all personnel working with or in close proximity of the machine have read and understood the contents of this manual, including the Appendix for Wireless Remote Control: Hectronic User's Manual, before commencing operations. Please take careful note of the Safety Precautions.

The operator's manual should be kept where the machine is.

To avoid serious or even fatal injury to the operator and persons in close proximity of the machine, it is important that the machine always is operated by trained, responsible personnel.

By reading and understanding the manual the operator will be able to take advantage of the many features and benefits of the Pentruder 3P8 HF-wire saw.

We are confident that your investment in this equipment and its many design features will enhance your business competitive edge and profitability!

1.1 Validity of this operator's manual

This operator's manual is only valid for the Pentruder 3P8 HF-wire saw as described in Chapter 2. Tractive AB always strives to improve the products. Therefore we reserve the right to make technical changes without previous information.

In the following operator's manual, "the machine", "wire saw" or "Pentruder 3P8" is used to refer to the complete machine as listed in Chapter 2.

Should questions arise, please contact our sales distributor. The address can be found at www.pentruder.com.

Product	**Description**	**Serial number**
Category:	High Frequency Wire Saw	
Make and type:	Pentruder 3P8	_____
Drive system:	Pentpak High Frequency Power Pack	
Type of drive system:	427 / 422 / 418 / 222 / 218 / 200	_____
Drive motor:	HF-motor	
Type of drive motor:	18, 22 or 27 kW HF-motor	_____
Accessories:	As described in Chapter 2.	
Remote control:	Cable or Wireless Remote Control	_____

Manufacturer:
Tractive AB
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S-781 70 Borlänge
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Web: www.tractive.se

Pentruder Distributor

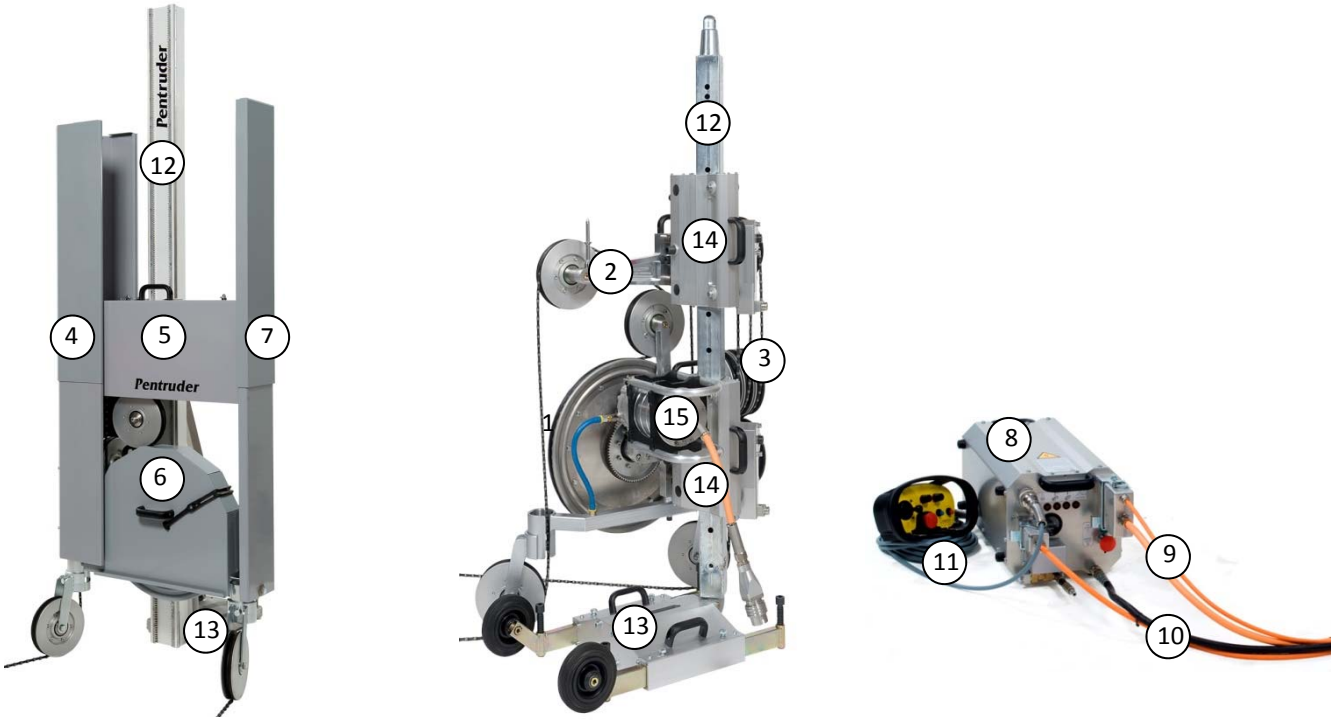
2 Description of the machine

The Pentruder 3P8 HF-wire saw combines low weight with very high power and suits both small and big jobs. No concrete structure is too small or too big to be cut with the Pentruder wire saw.

The 3P8 HF-wire saw can be driven by either one of the powerful 18, 22 or 27 kW HF-motors. The rig is either built on the wall saw track (MCCS) or on the 70 mm column system. Fully enclosing guards protects the operator(s) and keeps all expensive parts (reasonably) clean, like the carriages, main pulley drive system, column, etc.

Wire tensioning is fully automatic, with some exceptions. The tensioning of the wire is governed by software and a microprocessor / digital servo amplifier driven electric feed motor. The storage capacity is more than 20 meters depending on what combination of columns/track is used.

2.1 List of complete machine



A complete Pentruder 3P8 HF-wire saw is comprised of at least

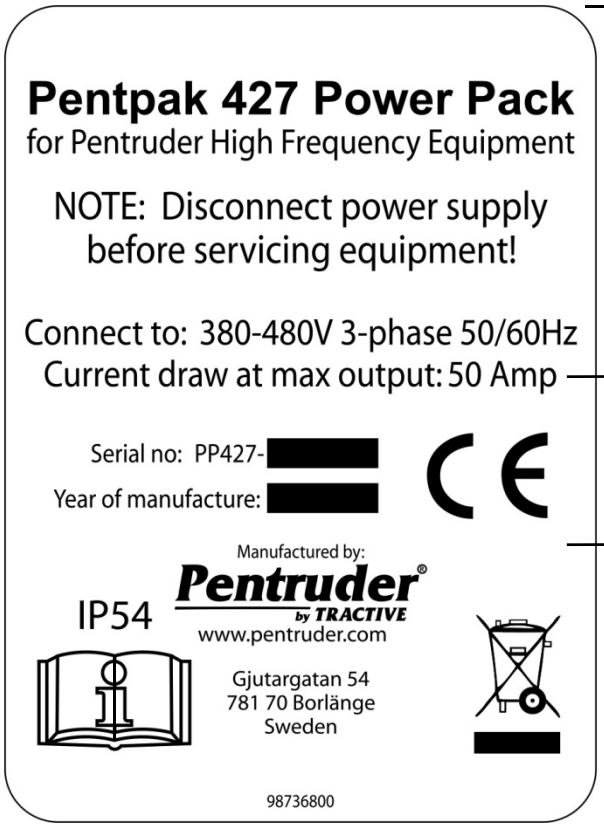
1. A 3P8-DP-HF, 3P8 Drive pulley electric
2. A 3P8-UA, 3P8 Upper assembly
3. A 3P8-LA, 3P8 Lower assembly
4. A 3P8-LMG, 3P8 Telescoping magazine guard
5. A 3P8-TG, 3P8 Top guard
6. A 3P8-DPG, 3P8 Drive pulley guard
7. A 3P8-SSG, 3P8 Slack side telescoping guard
8. A Pentpak high frequency power pack
9. A High voltage cable
10. A Low voltage cable with water hose
11. A Remote control
12. A track or column
13. A base plate
14. Two carriages
15. An HF-motor
16. Pentruder 3P8 HF Operator's manual (not pictured)
17. Appendix for Wireless Remote Control: Hectronic User's Manual (not pictured)

as described in this Operator's manual. Please note that a Pentruder 3P8 is not complete without the modules listed in this paragraph.

Other accessories:

- Rear support
- Satellite pulley
- Tools: Ratchet ½", Socket 19 mm (3/4"), Allen-socket 8 mm (5/16")

2.2 Signs and data plates on the machine

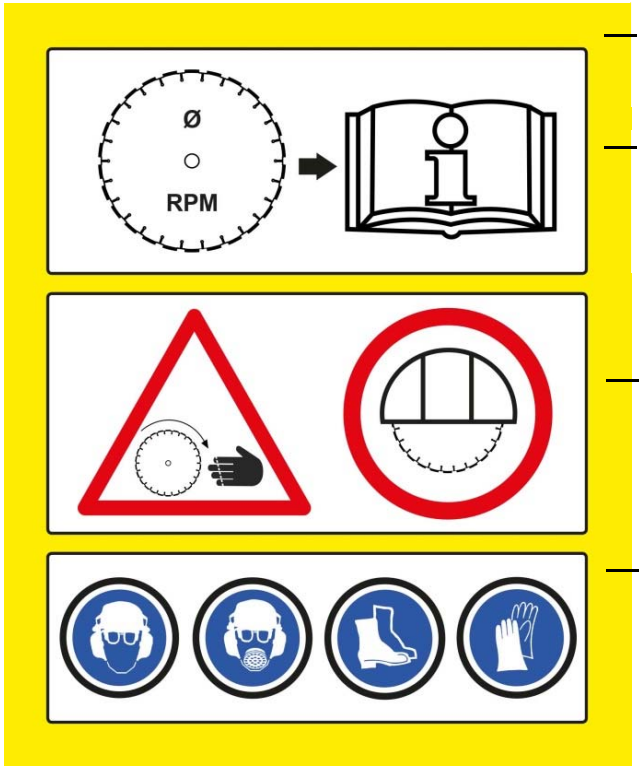


This sign is placed on the Pentpak and gives information about the complete machine as described in Chapter 2.

This product is in accordance with applicable EC-directives.

The trash bin symbol is an environmental marking and indicates that this machine contains electrical/electronical equipment which should be recycled.
Please contact your Pentruder Distributor for more information.

It is essential that all personnel working with, or in close proximity of the machine have read and understood the contents of this manual before commencing operations. Please take careful note of the Safety Precautions.



This sign is placed on the Pentpak and gives information about the complete machine as described in Chapter 2.

On the wire saw, the wire can be run in both directions. Please refer to the Operator's manual for wire speed.

Caution, risk of cutting!
Always use the guard on the machine.

All persons working with, or in the proximity of the machine should wear safety equipment, i.e. protection helmet, protection shoes, gloves, eye and ear protectors.
Find out what material is cut and wear appropriate dust mask or respiratory protection if necessary.

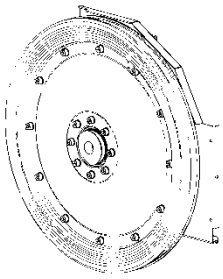
2.3 Modules 3P8

- 3P8-DP-HF, 3P8 Drive pulley electric
- 3P8-UA, 3P8 Upper assembly
- 3P8-LA, 3P8 Lower assembly
- 3P8-LMG, 3P8 Telescoping magazine guard
- 3P8-TG, 3P8 Top guard
- 3P8-DPG, 3P8 Drive pulley guard
- 3P8-SSG, 3P8 Slack side telescoping guard

2.3.1 3P8-DP-HF, 3P8 Drive pulley electric

The main drive pulley has a diameter of Ø 500 mm, 20". It has a rubber drive ring with a specially designed type of rubber compound giving very good traction wire to rubber, even when wet. The wire wraps around the main drive pulley over 270°, which gives superb traction.

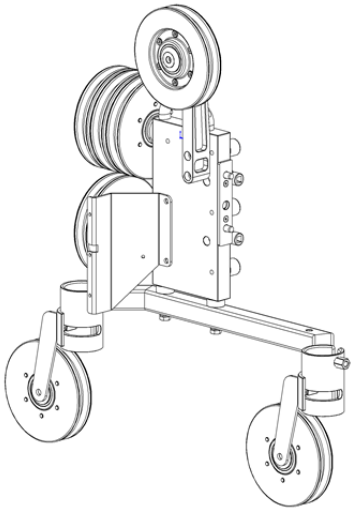
The main drive pulley is driven by a Gates toothed high torque Carbon cog belt. The belt transmission is hidden behind guards and protected from concrete slurry. The belt can be replaced using only a set of standard 6, 8 and 14 mm Allen keys.



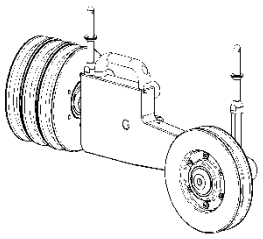
3P8-DP-HF = 3P8 Drive pulley for electric HF-motor

2.3.2 3P8-UA = 3P8 Upper assembly and 3P8-LA = 3P8 Lower assembly

- All swivelling wheel assemblies can easily be removed from their holders for easy cleaning and maintenance, by just removing one screw.
- All pulleys can easily be removed from their mountings. All bearings are sealed with external seals.
- The magazine and idler wheels are Ø 198 mm O.D., (7,8") and the wire is running on "pitch" Ø 180, (7.1").
- The magazine and idler wheels have a rubber rings with a specially designed type of rubber compund giving very good wear resistance. There are totally eleven such wheels on the 3P8, including six wheels in the magazine.
- All pulleys are a two piece design, and are bolted together. All rubber liners (rings) can easily be replaced using standard tools.
- When the rubber liners / rings are new, the groove width for the wire, in all wheels, is 10 mm, 0.930", meaning that it's suitable for a Ø 11 mm, 7/16" wire. Ø 8 mm, 5/16" wire also works well.



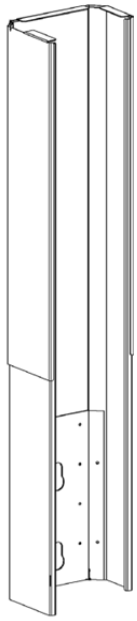
3P8-LA = 3P8 Lower assembly



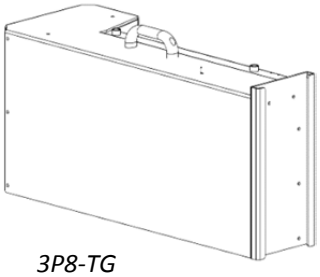
3P8-UA = 3P8 Upper assembly

2.3.3 Guards

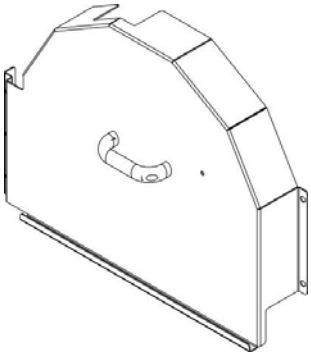
Fully enclosing and easy to fit guards protects the operator(s) and keeps all expensive parts (reasonably) clean, like the carriages, main pulley drive system, column, etc.



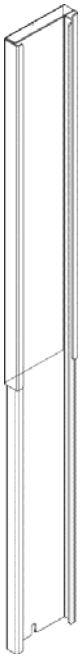
3P8-LMG



3P8-TG



3P8-DPG



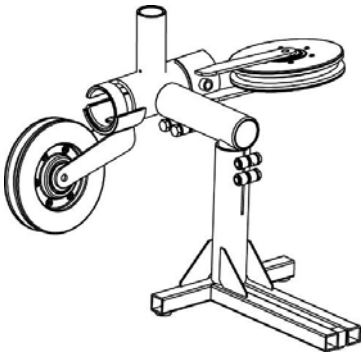
3P8-SSG

The guard must always be fitted when the machine is running.

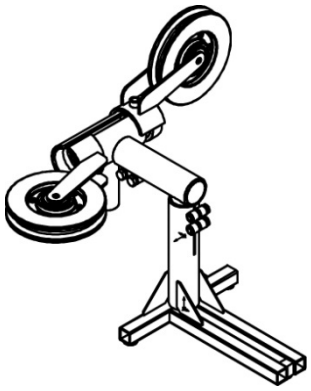
2.3.4 Accessories, wire sawing

In some setups it can be useful to use satellite pulleys. We offer three versions.

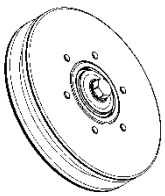
- WSP2-90, 2-link satellite pulley with 90°
- WSP2-180, 2-link satellite pulley with 180°
- WSP2-180, single satellite pulley.



WSP2-90



WSP2-180



WSP2-180

2.4 Rig for 3P8 wire saw with 70 mm column system

- CE1-70-3P8, Carriage CE1 for 3P8
- FE1, Friction brake for carriage
- CE1-70, Carriage CE1 for 70 mm columns
- PT-3P8, Electric feed unit 3P8 (100:1)

- CN 2.0-3P8, Column Female / plastic cap, 2 m (only extendable at the bottom)
- CN F/M, Columns F/M-70 Female / Male coupling, extendable, 0.5 / 1.2 / 1.5 m
- CN F/J, Columns F/J-70 Female / Jack screw, 0.5 / 1.2 / 1.5 m
- ET70, Eccentric bolt for TTFF and JTFF/JTFM tracks

- BE1/BE6, Base plate fixed quick disconnect coupling

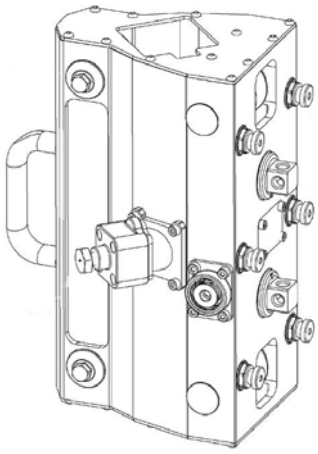
2.4.1 CE1-70/3P8 Carriages, FE1 Friction brake and PT-3P8 Electric feed unit

The lower carriage, CE1-70, doesn't move during operation of the wire saw. The friction brake prevents it from moving on the column during normal operation.

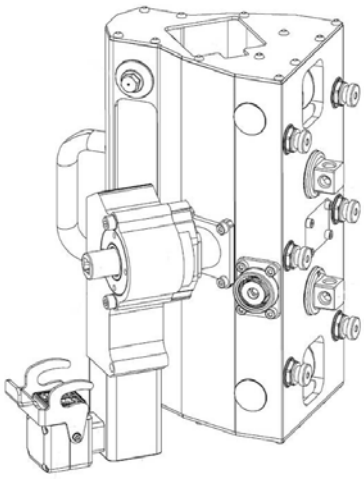
Note! Do not over tighten the friction brake.

The friction brake should be only moderately tightened so it will allow the carriage to slide upwards in the event of an abrupt jamming of the wire. The normal pulling force in the wire is about 100 kg's for a 22 kW HF-motor. Due to the amplifying effect of the forces, through the 3 loops in the magazine, the force applied on the carriages is 6 fold and can be in excess of 1000 kg during an abrupt jamming of the wire.

The Electric feed unit, PT-3P8, is fitted on the upper carriage, CE1-70-3P8. The electric feed unit moves the upper carriage upwards as the cutting advances. The feed rate is automatically controlled through software in the Pentpak HF-power pack and movement up and down is operated form the remote control.



CE1-70 with FE1



CE1-70-3P8

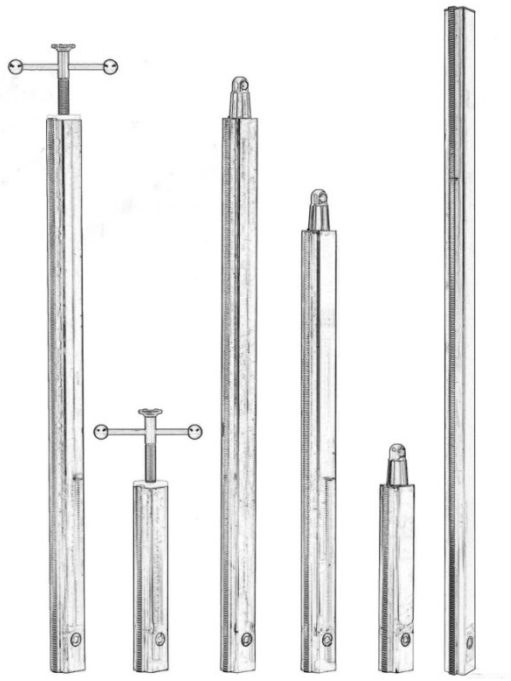
2.4.2 CN Columns and RST Rear Supports

There are three types of 70 mm CN Columns.
1. CN F/M-70 Extendable columns with a female / male configuration, meaning that each column is fitted with a female conical quick release coupling at one end, and a male coupling at the other end.

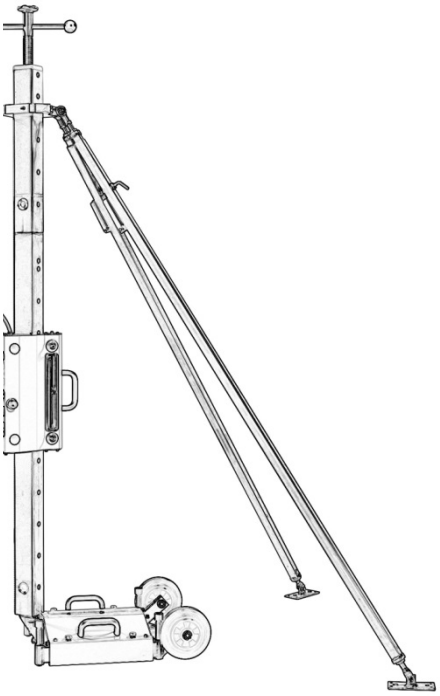
2. CN F/J-70 Columns with a Jack Screw in one end, where the male coupling sits on an extendable column, are used to jack the machine against ceiling or wall. The CN F/M and CN F/J columns are available in three lengths, 0.5 m, 1.2 m and 1.5 m.

3. CN-3P8 with a female coupling in one end and a blanking plug in the other end. This column is 2.0 meters and mostly used for the Pentruder 3P8 wire saw.

The ET70 eccentric bolt is used to fasten the track to the base plate or to fit two columns to each other.



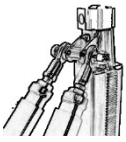
CN 1.5 F/J-70 / CN 0.5 F/J-70 / CN 1.5 F/M-70 / CN 1.2 F/M-70 / CN 0.5 F/M-70 / CN 2.0-3P8



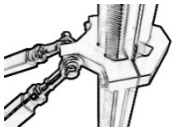
BE1base plate, CN 1.5 F/M + CN 0.5 F/J, CE-1-70 lower carriage, RST-CN-U

2.4.3 RST-Rear Support for Column

There are two RST Rear support versions available for the CN columns, one which is fastened on the male cone coupling on the top of the column, RST-CN-M (Rear Support for Column, Male coupling) and one which is fastened directly on the column, RST-CN-U (Rear Support for Column, Universal). The length can be adjusted between 2.1 and 3.2 meters (6.8' up to 10.5').



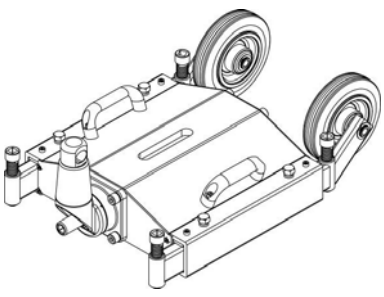
RST-CN-M



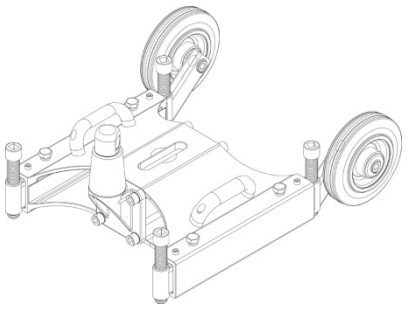
RST-CN-U

2.4.4 BE1 and BETC base plates

The BE1 and BE6 base plates are used with CN columns. The conical quick coupling on BE1 is fixed. There is also a BE2 base plate where the conical quick coupling can be swiveled sideways in increments of 5°, but we don't recommend this base plate for wire sawing. The base plate BE6 has cut outs.
The columns fitted on the conical quick release coupling can be swiveled around its own axis, and great flexibility is offered to simplify set-up.



BE1



BE-6

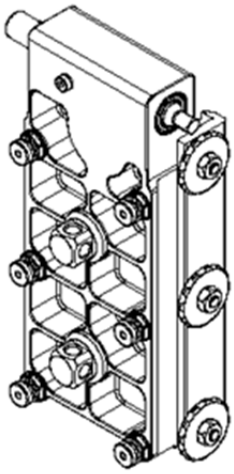
2.5 Rig for 3P8 wire saw with saw track (MCCS)

- CEG-M25 Carriage, gliding, 3P8, drilling, chain sawing, manual, gear ratio 25:1
- CEG-E-3P8 Carriage, gliding, 3P8, electric, total gear ratio 5000:1. Max feed speed 0.4 m/min.
- TS T-slot type track, 0.85 / 1.15 / 1.7 / 2.0 / 2.3 / 3.45 m (33", 45", 67", 79", 90.5" and 11')
- RST-TS1 Rear support for TS-track, 2.1-3.2 m (6.8' - 10.5'). - accessory
- BTS-4 Base plate for TS type tracks, rectangular, 220 x 320 mm (8.7"x12.6")
- BTS-5 Base plate for TS type tracks, heavy duty, rectangular, 280 x 400 mm (11"x15.75")
- WT-BTS-4 Wheel kit for BTS-4 – accessory
- WT-BTS-5-200 / -300 Wheel kit for BTS-5 - accessory

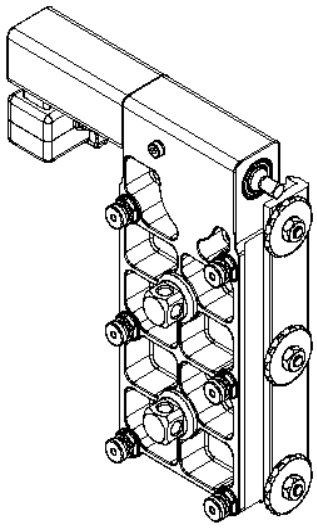
2.5.1 CEG Carriages - MCCS

The lower carriage, CEG-M25 doesn't move during normal operation.

The upper carriage, CEG-E-3P8 has a built in electric feed unit. The electric feed unit moves the upper carriage upwards as the cutting advances. The Electric feed unit, PT-3P8, is fitted on the upper carriage, CE1-70-3P8. The electric feed unit moves the upper carriage upwards as the cutting advances. The feed rate is automatically controlled through software in the Pentpak HF-power pack and movement up and down is operated form the remote control.



CEG-M25

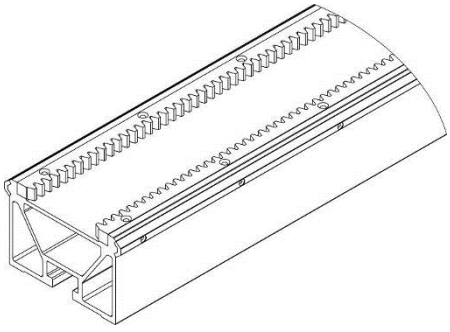


CEG-E-3P8

2.5.2 TS T-slot type track - MCCS

The Modular Concrete Cutting System (MCCS) is based on the t-slot type track which has been used for the Pentruder wall saw since 1997. The TS track is very light weight, yet offers great stiffness and stability to the system.

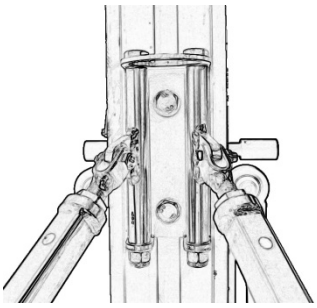
The TS tracks are available in the lengths 0.85, 1.15, 2, 2.3 and 3.45 m (33", 45", 67", 79", 90.5" and 11') and the weight is 6.95 kg per meter (4.7 lbs/foot).



TS0.85 / TS1.15 / TS1.7 / TS2.0 / TS2.3 / TS3.45

2.5.3 RST-TS1 Rear support

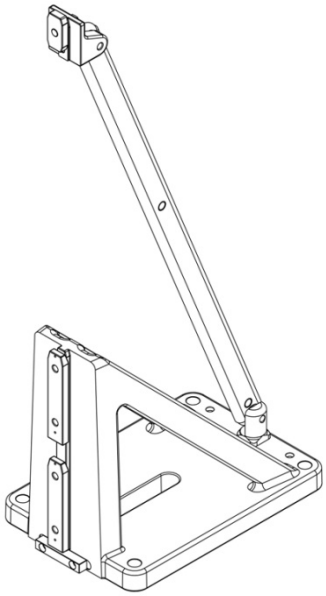
The RST-TS1 rear support is fastened on the TS track with a t-slot profile. It can be fastened anywhere along the track. The rear support legs are telescopic and can be adjusted from 2.1 meter up to 3.2 meter (6.8' up to 10.5'). There is a bracket for straps on the clamp.



Rear support RST-TS1

2.5.4 Base plate BTS4 - MCCS

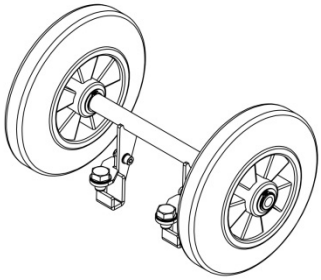
BTS-4 Base plate



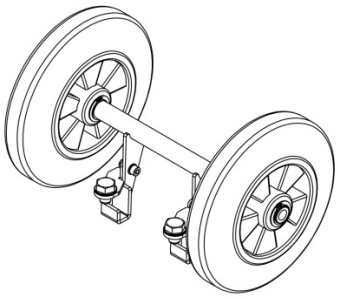
BTS-5 Base plate

The heavy duty base plate, BTS-5, is recommended for wire sawing.

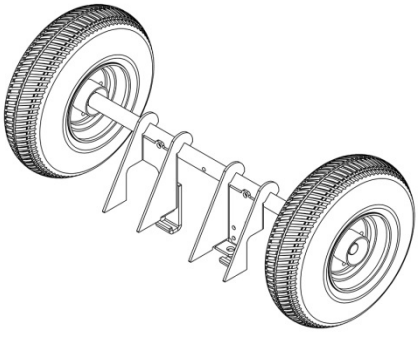
2.5.5 Wheel kits



WT-BTS4



WT-BTS5-200



WT-BTS5-300

2.6 Pentpak high frequency (HF-)power pack with Cable remote control

Depending on voltage and chosen HF-motor there are different HF-power packs.
For 380 – 480 V Input voltage there is the

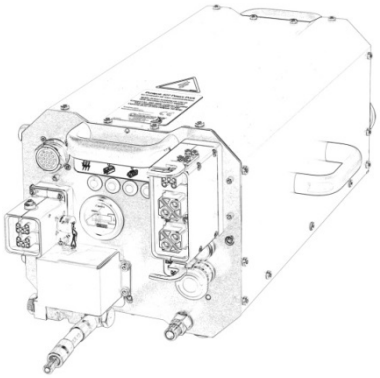
- PP427, Pentpak 427 for up to 27 kW HF-motor

For 200 – 230 V Input voltage there is the

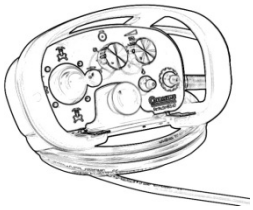
- PP200, Pentpak 200 for up to 22 kW HF-motor (50-400 Hz input frequency)
- PP218, Pentpak 218 for up to 18 kW HF-motor

In the following operator's manual Pentpak HF-power pack or just Pentpak is used to refer to all of the Pentpak HF-power packs listed above.

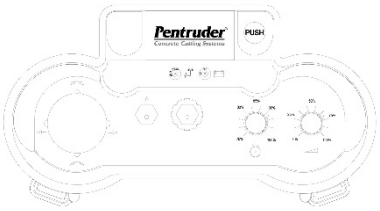
The Pentpak is used with the CRC Cable remote control, a High voltage cable with digital communication connectors, HF400-9-30, 400V Cable for 380-480 V Pentpak's, or HF200-9-30, 200V Cable for 200-230V Pentpak's and a Low voltage cable with digital communication connectors, LV24-9-30, 24V Cable with water hose.



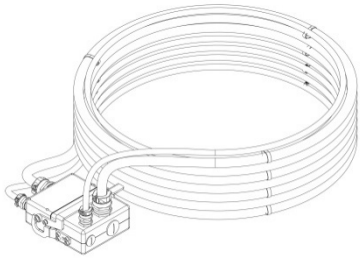
Pentpak 427, 422, 418, 200, 218, 222



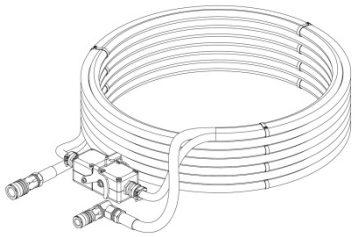
CRC Cable Remote Control



WRC Wireless Remote Control



HF400-9-30 / HF200-9-30



LV24-9-30

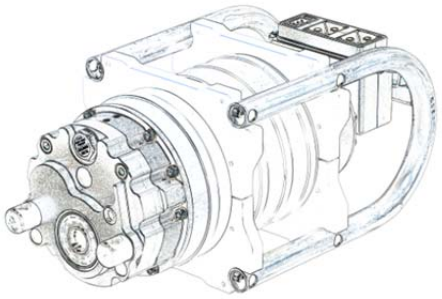
- The Pentpak is water cooled. If there is a risk of freezing, the machine has to be drained from water. See 4.8.3 Connection to water supply.
- The Pentpak is compact and weighs only 26 kg, still it can drive the electric motor with a continuous output of up to 27 kW depending on model.
- The Pentpak has a high overall efficiency factor and at 400 V a 32 Amp delay fuse will be enough to run the power pack and motor at their maximum rated output. We recommend to use a 40 Amp fuse. Even 16 Amp (25 Amp for the 27 kW HF-motor) delay fuses can be used but then the power output must be reduced by lowering the setting of the feed rate knob.
- Robust and easy to use Wireless Remote Control.
- The WRC Wireless Remote Control can also be used with a cable (accessory) where it is not permitted to use wireless (radio) control.
- The WRC Wireless Remote Control uses totally unique control signals and the receiver cannot disturb or be disturbed by other transmitters.

2.7 Drive motor and slip clutch

High frequency motors:

- HFR427, 422, 418- High frequency motors 27, 22 and 18 kW, 400V
- HFR222, 218 – High frequency motors 22 and 18 kW, 200V
- 57253101 Slip clutch for HF-motor (optional)

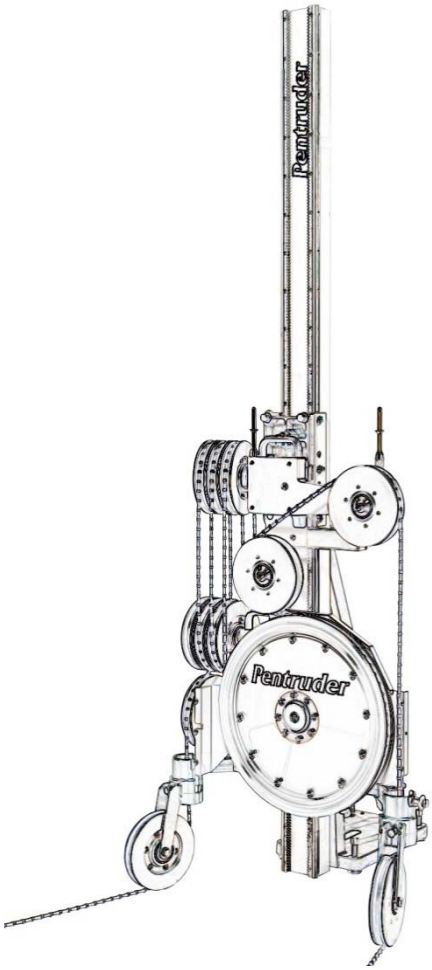
The same HF-motor is used for both wire sawing and wall sawing. We recommend the HFR422, 22 kW HF-motor but the 18 kW and 27 kW HF-motors are also suitable for wire sawing.



HFR418, HFR422, HFR427, HFR218, HFR222

2.8 Wire storage principle

- There are four loops of wire being tensioned, three in the magazine, and one on the return or slack side, this means that if the upper carriage moves 1.0 meter, you have stored 8 meters in the magazine.
- All 3 + 3 rollers in the magazine are used, always. The feed regulation parameters are based on the resistance and force needed to tension the wire when it runs over all rollers.
- The wire magazine stores 8 m of wire per 1 m of stroke of the tensioning carriage (the upper carriage).
- In the case of the square steel column system, the magazine can store (pull in) over 20 m of wire if the total column length is 3.0 m or more. Any combination of 0.5, 1.2, 1.5 and 2.0 m columns can be used. If the wall saw track version is preferred, the maximum length of track is 2.3 m with an unsupported track, or 3.45 m if the upper end of the track is supported by a rear support.
- Objects 2.2 x 10 m, (7,2 x 33 ft.), has been cut without shortening the wire, and then the carriage was moved over 2.5 meters, 8.2 ft up, taking in over 20 meters, 65 ft. of wire!
- The wire can be run over all wheels on the machine without opening (cutting) the wire.
- The wire can be run over the adjustable swivelling wheels, without having to cut the wire.



Pentruder 3P8 HF-wire saw on rig with saw track column system (MCCS)

3 Safety instructions

3.1 Safety instructions which are used in this operator's manual

⇨	**Note!**	This sign indicates technical specifics and methods which will facilitate the job.

!	**Important!**	Here we inform about risks connected with use of the machine, and, if the safety precautions are not respected, can result in damage to property and persons in close proximity to the machine.

⚠	**WARNING!**	Here we inform about risks connected with use of the machine, and, if the safety precautions are not respected, can result in serious injury and even to fatal injuries to persons in close proximity to the machine.

3.2 Intended use of the machine

It is of paramount importance that the operator has full knowledge and understanding of the Safety instructions.

This wire saw may not be used unless the operator is fully familiar with the contents of this Operator's manual and has been trained in its operation by an authorized distributor of Tractive AB's products. If using a WRC Wireless Remote Control, the operator must also be fully familiar with the contents of the Appendix for Wireless Remote Control: Hetronic User's Manual. The operator is fully responsible for the manner in which the machine is operated. It is the responsibility of the purchaser that the operator has received the information needed to operate and handle the machine in a safe a correct way.

Good working practice should always be used along with common sense. Tractive cannot foresee every possible situation and this manual is not a substitute for professional skills and experience.

The Pentruder 3P8 HF-wire saw is intended to be used together with a Pentpak HF-power pack. The Pentruder 3P8 cannot be used with any other type of power pack. The Pentpak HF-power pack may only be used to power Pentruder HF-machines.

The Pentruder 3P8 HF-wire saw may only be used for cutting of

- Concrete
- Stone material
- Masonry

It is our expressed recommendation that the machine may only be used for cutting in these materials.
The base plate must be mounted on a stable structure, not on a mobile device.
Other use is non-intended and therefore to refrain from.

Always use a diamond wire suited for the power of the machine. Follow the diamond wire manufacturer's recommendations.

⚠	**WARNING!**	Do not use the machine for cutting other materials than listed or on loose masonry. The safe fastening of the base plate cannot be guaranteed.

!	**Important!**	Please observe that Tractive's responsibility as a manufacturer can only be accepted when the wire saw, Pentruder 3P8, is used together with power packs and accessories described in this Operator's manual. If the machine is used with non-original equipment the warranty and Tractive's CE-marking will be void.

3.3 General safety instructions

WARNING!

WARNING - DANGER OF LIFE!

Cutting in a power line which is energized can result in serious injury and even to fatal injuries. The wall saw can get energized. A circuit breaker cannot protect against this danger.

WARNING!

- The machine is state of the art and follows the present regulations. However, incorrect handling of the machine can lead to serious or even fatal injury to the operator and persons in proximity to the machine.
- All persons which are operating or in any way working on the wire saw has to read and understand the whole operator's manual and especially the safety instructions, before any work is commenced. If using a WRC Wireless Remote Control, the operator must also be fully familiar with the contents of the Appendix for Wireless Remote Control: Hetronic User's Manual. It is the obligation of the buyer to make sure that the operator really has received the information necessary to operate and take care of the machine in a correct and safe way.
- Good working practice should always be used along with common sense. Tractive cannot foresee every possible situation and this manual is not a substitute for professional skills and experience.
- The machine may only be operated and serviced by authorized and trained personnel. The personnel should be trained by personnel authorized by Tractive.
- A Pentruder machine used in the correct way is a safe and efficient tool. If the machine is used improperly this can expose the operator and other persons staying in the same area to extreme danger or even risk of fatal injuries.
- The user is liable that the wire saw is in faultless condition and that all functions are in order before work is commenced.
- To maintain the level of safety inherent in the design of this machine, only Tractive original spare parts may be fitted. Tractive AB disclaims all responsibility for damages occurring as a result of use of non-original parts.

- Modifications or changes on machine are not allowed.
- All warranty claims are void if non original spare parts are used.
- Before any kind of service or mounting on the machine is commenced, the machine must always be disconnected from the electric power supply.
- The machine may not be used in an environment where explosion protected equipment is demanded.
- Tractive AB disclaims all responsibility for damages to persons and / or property resulting from use of the machine, whether they are caused by faulty handling or from damages that have occurred as a consequence of negligent or faulty maintenance, or as a consequence of failure to check and control the machine with regard to damages and / or faults.

3.4 Safety precautions at site

Wire sawing can be a very dangerous exercise! All possible safety precautions must be taken to avoid accidents from happening.

WARNING

BEFORE CUTTING

Before cutting is commenced, make sure that;

- There are no power lines, gas or piping which can be damaged by the machine.
- The statics of the building are not compromised because of the cut openings.
- Check with the foreman responsible that all necessary precautions have been performed before commencing work. Await the approval of the safety precautions and mounting position of the machine from the foreman before work is commenced.
- Safety and health regulations at the work place must be followed.
- No work should be commenced which cannot be judged to be safe. Always use common sense and good working practice.
- Always check that the machine and diamond wire is in faultless condition and that all functions are in order before work is commenced.
- Never use a diamond wire for material which it is not intended for.
- Before cutting is commenced all persons involved must know how the emergency stop buttons are working.
- Follow the instructions in 0 5.2 Starting the HF-machine
-
-
-
-
-
-
-

WRC Wireless remote control

CRC Cable remote control

1. Emergency stop button
2. Plunge and travel control joystick
3. Water valve ON/OFF switch
4. Blade motor ON/OFF switch

5. Blade speed control knob/potentiometer
6. Feed control knob/potentiometer
7. Start key

It is not possible to control any functions on the machine unless a remote control is connected to the power pack, either via cable or the wireless remote control.

- to make sure the diamond wire will not start at and/or cut at a too high speed.

WEAR SAFETY EQUIPMENT

- All persons working with, or in the proximity of the machine should wear safety equipment, i.e. protection helmet, protection shoes, gloves, eye and ear protectors. The noise level during cutting might lead to permanent hearing disorders if not ear guards are worn.
- Find out what material is cut and wear appropriate dust mask or respirator protection if necessary.

MOUNT ACCORDING TO THE INSTRUCTIONS

- Before any kind of service or mounting on the machine is commenced, the machine must always be disconnected from the electric power supply.
- The base plate may only be mounted according to the instructions given in this manual.
- Make sure a guard **always** is properly fitted during the cutting process as well as deflectors to protect the free wire to and from the cut.
- The power or force applied on the wire in the 3P8 is higher than on any other commercially available electrically driven compact (non quarry type) wire saw. Therefore it is important to splice the wire carefully.

LIFTING AND TRANSPORTING

- Always lift the machine ergonomically correct and in a safe way.
- Should the machine need to be lifted with a crane, this should only be done after permission and instructions have been given by a person responsible for safety on the site.

WARNING!

RISK AREA

- The operator shall keep a minimum safety margin of 1.5 m to all working and moving parts during the operation. Should the machine fall down from the wall or ceiling it could cause severe injuries. There is always a danger of wire tear and thereby connected wire lash. Deflectors may be necessary in addition to the machine guard.
- The operator should have good supervision over the machine from each control position.
- The risk area must be roped off and the operator must make sure that no unauthorized persons are within the risk area.
- Clear the working area and make sure no unauthorized persons are within the risk area, see drawing below, before the machine is allowed to be started.
- All guards must be fitted on the machine and properly locked while it is running and the wire must be protected by deflectors over its whole free length, as well and to the cut object.
- Never stand in line with the cut line.
- Remember always to cover cut openings so that no person falls down and hurts himself.
- Secure the concrete before starting work to make sure there is no possibility that concrete blocks may fall down causing injury or damage to persons or property.
- Concrete blocks which are cut free may not be allowed to fall freely as this could compromise the safety of the machine and/or diamond tool.

For drawings of the Machine's Risk area, see next page.

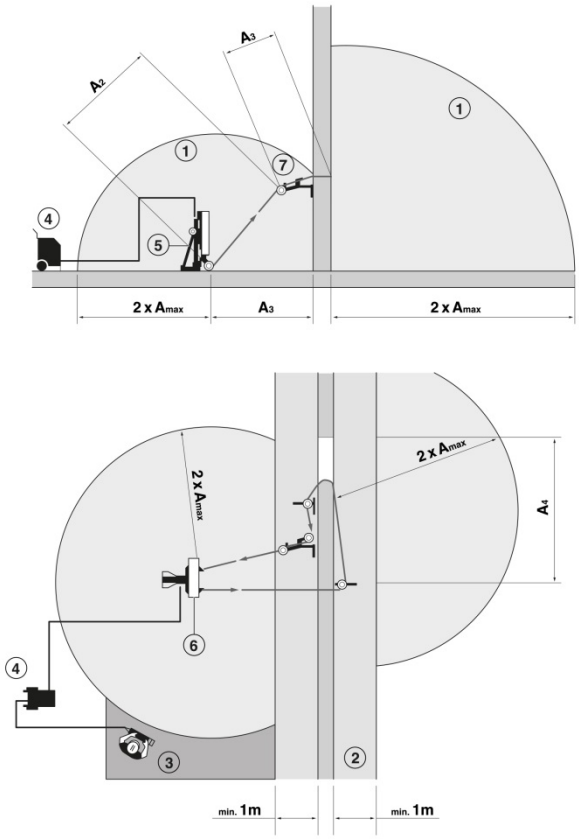
! **Important!**

- The power pack is water cooled and must be drained from water when the ambient temperature is in the proximity of or below 0 degrees Celsius. See 4.8.3 Connection to water supply.
- The water supply may only be connected to the short hose on the water ON/OFF-valve on the power pack. The quick disconnect couplings may not be replaced with couplings that are not fully open when disconnected.
- The transistor power modules in the power pack are water cooled and the water pressure must therefore be limited to max 5 bar.
- The power pack should preferably only be operated when it is put on its back with the warning triangle upwards.
- Connect the HF-power pack only to Pentruder HF-wall saws, Pentruder HF-Wire Saws, HF-drill motors or any Pentruder equipment which has been manufactured or approved by Tractive AB.

3.4.1 The machine's risk area

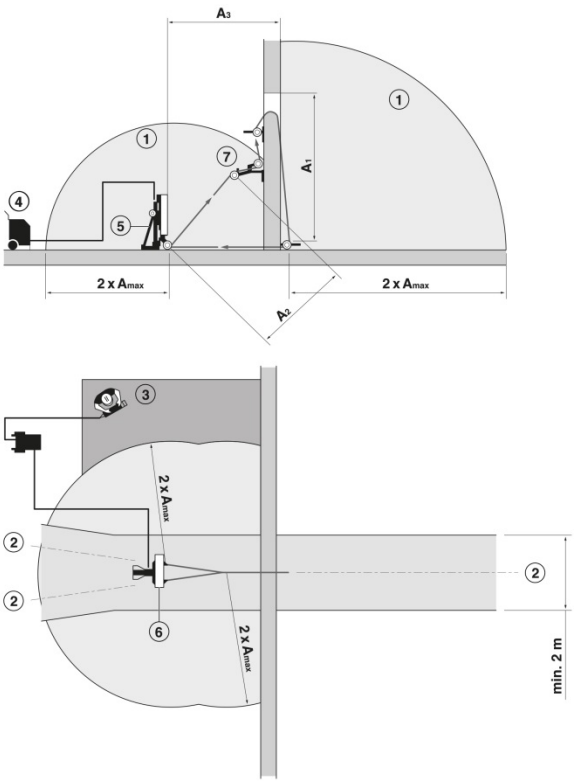
Nobody is permitted to be within the machine's risk area when work is underway. This also applies for the operator.

Wall cutting with satellite pulley



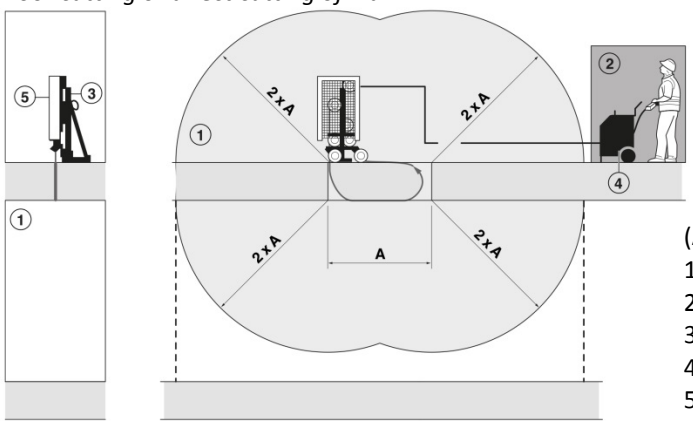
(A_{max}) Largest free running wire section (A_1-A_4)
1. Risk area
2. Risk area of the horizontal projection of the wire towards the operator
3. Recommended operator position
4. Power pack
5. Wire drive unit
6. Wire guard
7. Pulley wheel

Cutting with additional satellite pulleys



(A_{max}) Largest free running wire section (A_1-A_3)
1. Risk area
2. Risk area of the horizontal projection of the wire towards the operator
3. Recommended operator position
4. Power pack
5. Wire drive unit
6. Wire guard
7. Pulley wheels

Floor cutting or direct cutting of wall



(A_x) Largest free running wire section
1. Risk area
2. Recommended operator position
3. Wire drive unit
4. Power pack
5. Wire guard

4 Preparations and mounting

4.1 Advice about the positioning of the Pentruder 3P8 wire saw

- When setting up the base plate, pay attention to the positioning of the wire going out from and back to the machine. Try to plan the set-up so that satellite wheels are not needed.
- The 3P8 can most often be mounted directly on the cut object. If this is possible, it is called a direct cut.
  A direct cut is preferable as extra satellite pulleys steal power.
- Naturally, in some instances satellite wheels must be used. If this is the case, try to avoid using satellite on the slack side. This is where the wire goes out from the machine and where the RH swivel wheel is. The RH side if you stand in front of the main drive pulley.
- Try to position the base plate so that the wire goes back in to the concrete or the cut object with the wire running over the RH swivel wheel when cutting starts.
- What we are after with these recommendations is to create as little friction as possible on the slack side. Then the cutting will go faster and the feed regulation will work best.
- Normally, corners will NOT have to be broken off or chamfered before commencing a cut. Maximum torque is available from 0 motor speed, and the wire can be started smoothly. Note, a new wire with sharp bead edges is much harder to start over sharp corners than only an ever so slightly used wire. With a new wire, it may be necessary to chamfer edges on the object to be cut.

4.2 Mounting the base plate

The surface where the base plate is fastened should be stable, free of obstacles and adequately lit. The base plate should be mounted in such a way that it cannot become detached when the machine is working, or at sudden changes in load on the anchor bolts.

For safety reasons it is very important that the base plate is properly fastened. If mounted on brick or porous concrete the base plate must be bolted down with M16 / 5/8" through bolts. Use only high quality anchors and bolts.

WARNING!

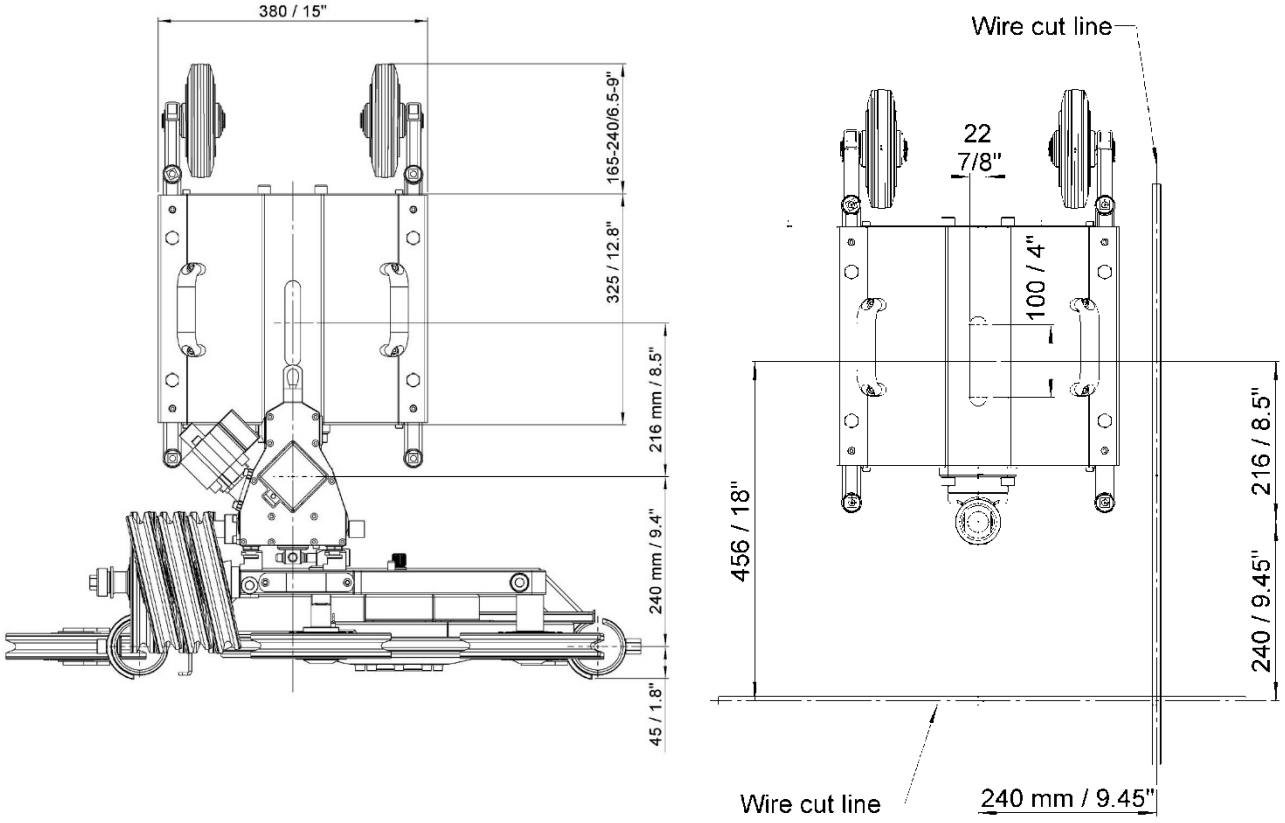
- If the base plate is not securely fastened to a solid foundation, the very high forces applied on the wire by the tractive power will cause instability and will lead to unforeseen events that can lead to serious or fatal injury.
- If HKD anchors or other high quality expansion anchors cannot be fixed securely, the base plate must be securely fixed with through bolts and large washers to achieve the required level of safety.
- Do not use the machine if the base plate cannot be fastened properly.

4.3 Mounting 3P8 HF-wire saw with 70 mm column system

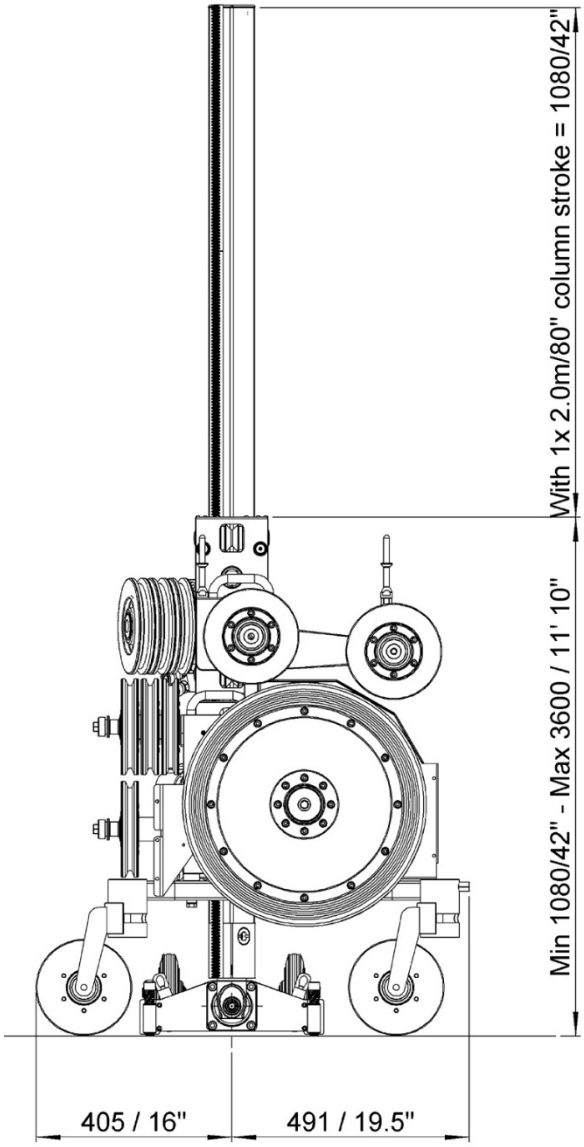
4.3.1 Measurements for positioning – 70 mm column system

The wire cut line will be as shown in the following drawings.

Note: The column can rotate around its own axis, and be locked in any position. Therefore you may prefer to measure your anchor position from the center of the column.



Meausurements for positioning of wire saw – 70 mm column system – view from top



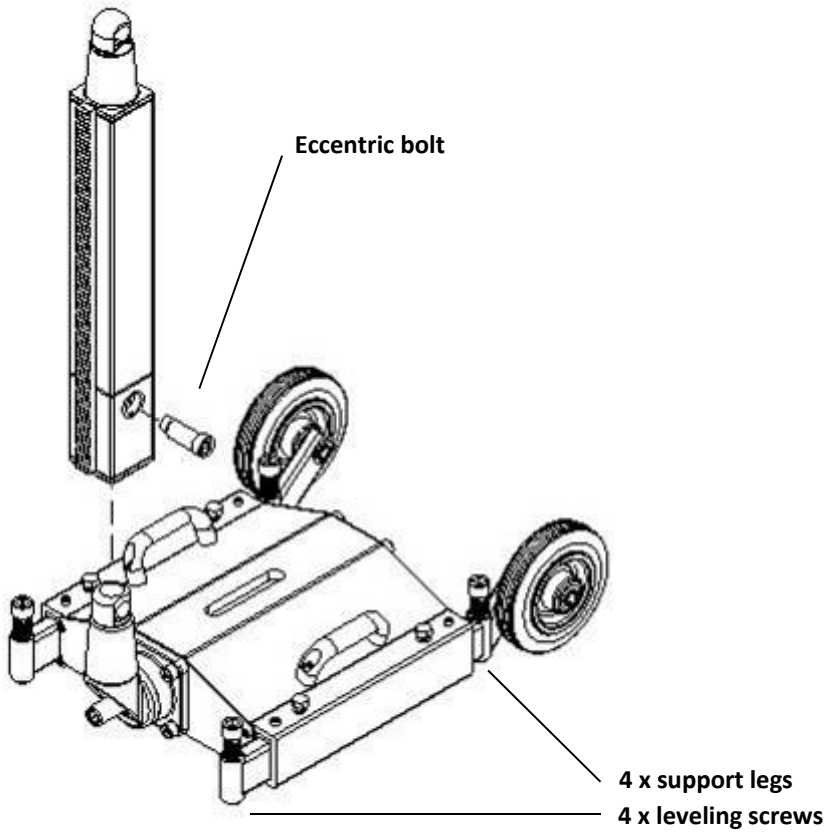
Stroke of carriage - Measurements

4.3.2 Mounting sequence for wire saw with 70 mm column system

1. Base plate
2. Column or columns
3. Lower carriage
4. Upper carriage
5. Mount pivoting head in some setups (accessory)

1. Mount the base plate

a. Bolt the base plate to a solid object . See 4.2 Mounting the base plate.
b. Adjust the support legs.
c. Level the base plate using the four leveling screws.



BE2 and column-CN 0.5 F/M-70.

2. Mount the columns or columns

a. The column is locked by turning the eccentric bolt Clockwise.
b. To release the column, the eccentric bolt is turned Counter Clockwise until it lifts from the cone.
c. To remove the eccentric bolt, turn it slightly Clockwise again until the load on the bolt is gone, and then pull out the bolt, and the column can be removed.

! Important!

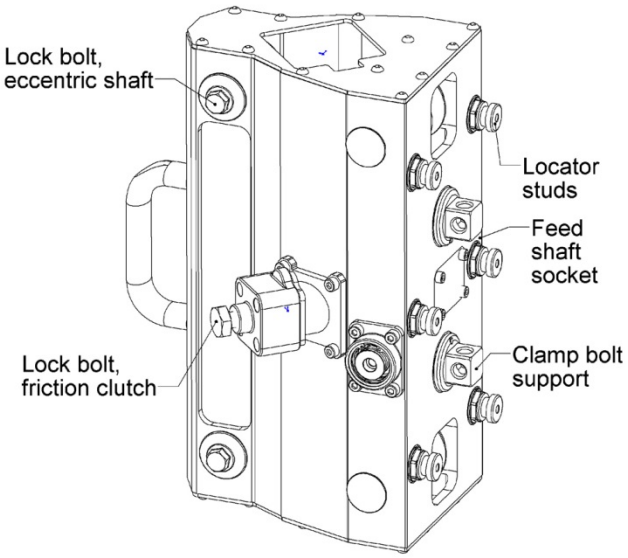
- Do not insert your fingers in the bolt hole.

3. Mount the lower carriage on the column

a. Loosen the socket on the friction clutch one turn. (19 mm / 3/4" spanner)
b. Slide the carriage over the column
c. Adjust the height of the carriage by turning the feed shaft socket with a ratchet or knuckle bar.
d. Tighten the friction clutch socket.

Note! Tighten moderately, do not over tighten!

The friction brake should be only moderately tightened so it will allow the carriage to slide upwards in the event of an abrupt jamming of the wire. The normal pulling force in the wire is about 100 kg's for a 22 kW HF-motor. Due to the amplifying effect of the forces, through the 3 loops in the magazine, the force applied on the carriages is 6 fold and can be in excess of 1000 kg during an abrupt jamming of the wire.

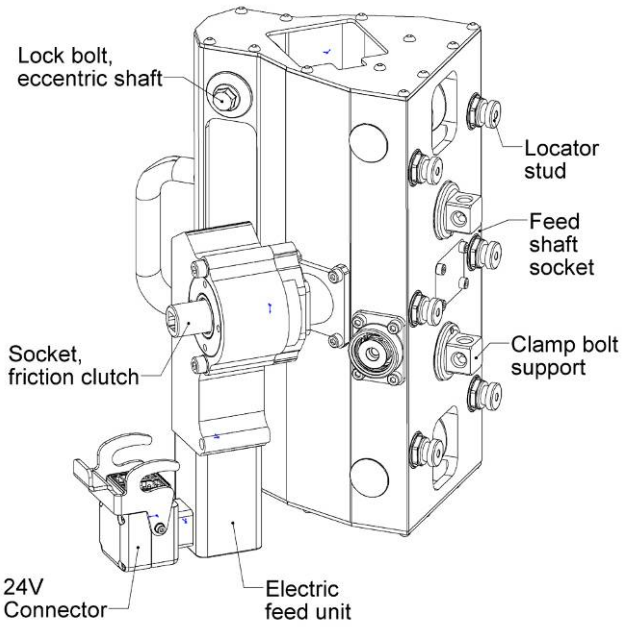


Lower carriage

4. Mount the upper carriage on the column

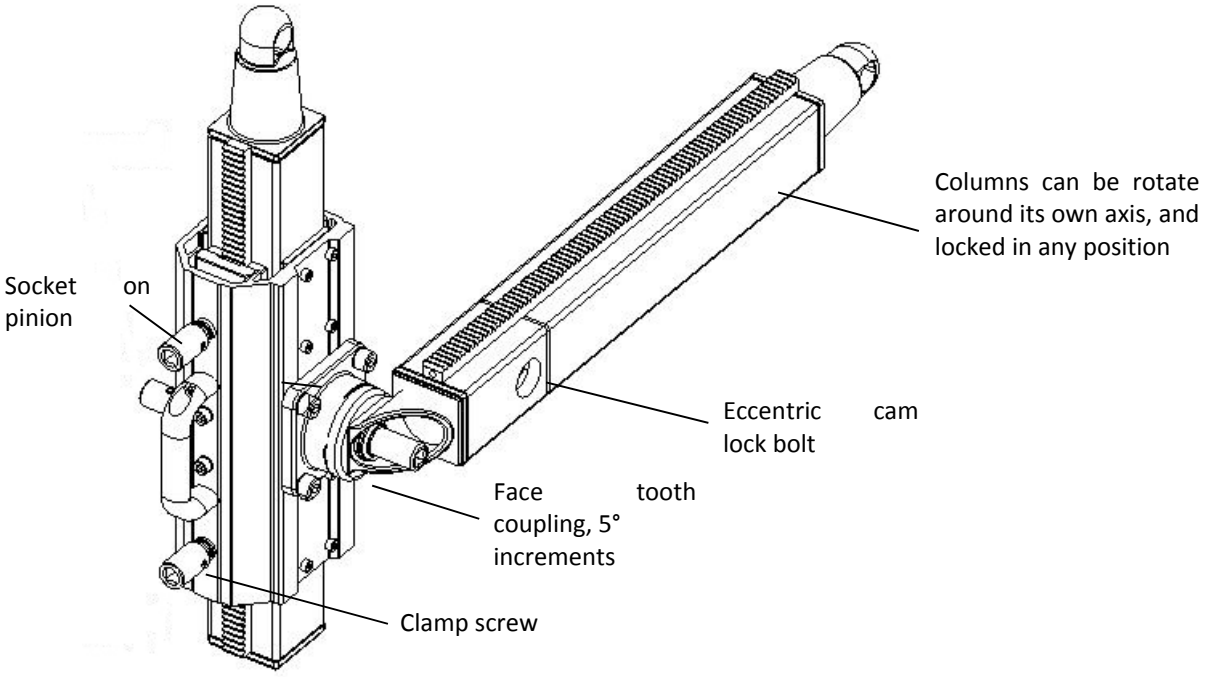
a. Loosen the socket on the friction clutch one turn.
b. Slide the carriage over the column
c. Adjust the height of the carriage by turning the feed shaft socket with a ratchet or knuckle bar.
d. Tighten the friction clutch socket.

Note! Tighten firmly, but do not over tighten!



Upper carriage

5. Mount a Pivoting head - PD1 (accessory)


Columns can be rotate around its own axis, and locked in any position
Socket on pinion
Eccentric cam lock bolt
Face tooth coupling, 5° increments
Clamp screw

Pivoting head-PD1 with column.

In many cases an universal pivoting head can be used to simplify set-up and to add versatility to the system. The Pivoting Head can for example be fitted on a vertical column and a horizontal column fitted to the Pivoting Head conical quick coupling.

To use the pivoting head

a. Mount the pivoting head on the column
b. Adjust height and tighten the clamp screws slightly.
c. Use a ratchet or knuckle bar to move the pivoting head to the desired position on the column.
d. Lock the pivoting head with the clamp screws.
e. To mount the second column on the pivoting head, align bolt hole with pull stud hole in the male conical coupling, insert an eccentric bolt and tighten hard, clockwise, with a ½" knuckle bar or ratchet.
f. Now you can mount the carriages on the horizontal column, see mounting of carriage.

The column quick coupling is of the same type as on Base Plate BE2, with a swiveling face tooth coupling allowing for adjustment of drill angle in 5° increments.

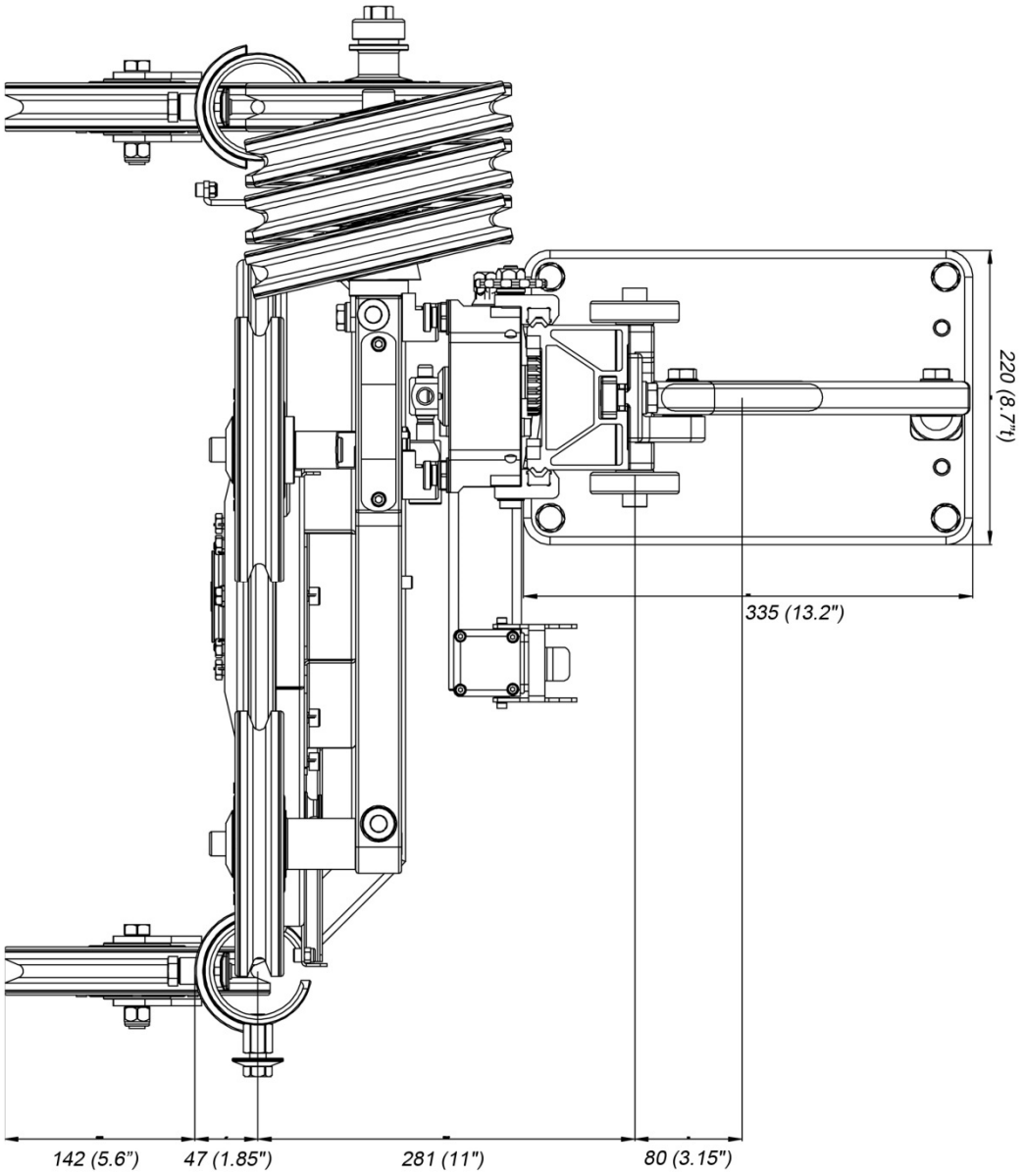
! Important:

- Be observant so that the eccentric bolt doesn't slip out of the column when the column is mounted on the conical coupling on the pivoting head. It MUST be completely flush with the column side face.
- Before tightening the adjustable male-coupling please make sure the face teeth are correctly in mesh.
- When the eccentric bolt is removed, do NOT put your fingers in the bolt hole.
- When the pivoting head is mounted, be sure that the locking screws are tightened to give enough friction between column and pivoting head, to keep the pivoting head from sliding down the column in an uncontrolled way.

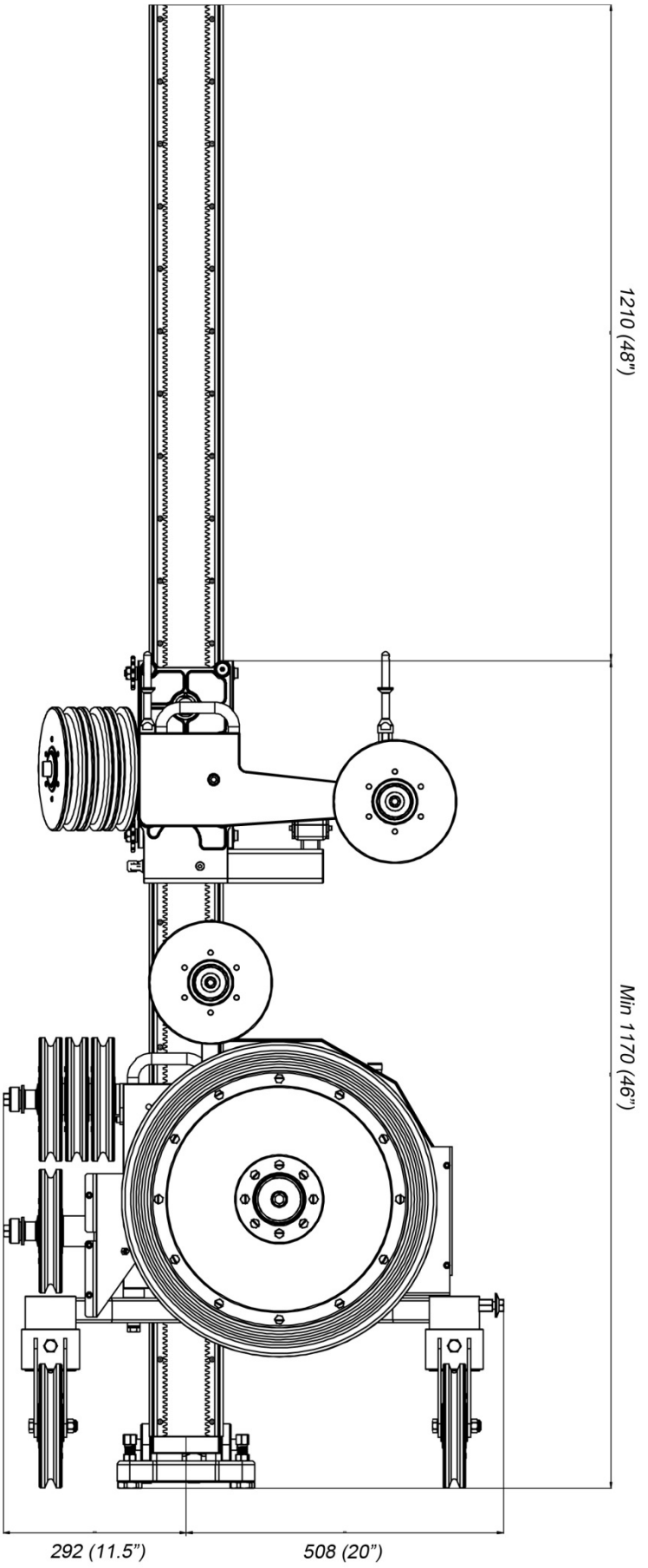
4.4 Mounting 3P8 HF-wire saw with with TS track (MCCS)

4.4.1 Measurements for positioning – TS track (MCCS)

The wire cut line will be as shown in the drawing below.



Measurements for positioning of wire saw – TS Track (MCCS)



Stroke of carriage – Measurements – TS Track (MCCS)

4.4.2 Standard mounting sequence with TS track (MCCS)

1. Track on base plate
2. Lower carriage
3. Upper carriage

1. **Mounting the track on the base plate**

We recommend to assemble the base plate on the track first, and then fastening the assembled rig on the concrete.

a. Slide the upper clamp in to the track. Older tracks with only one rack can be used. In this case make sure the rack is on the left side seen from the rack side of the track.

b. Slide the lower clamp in to the track.

c. Tighten the two bolts on the lower clamp.

d. Tighten the upper bolt loosely.

e. When the track is in the right position, tighten the bolt properly.

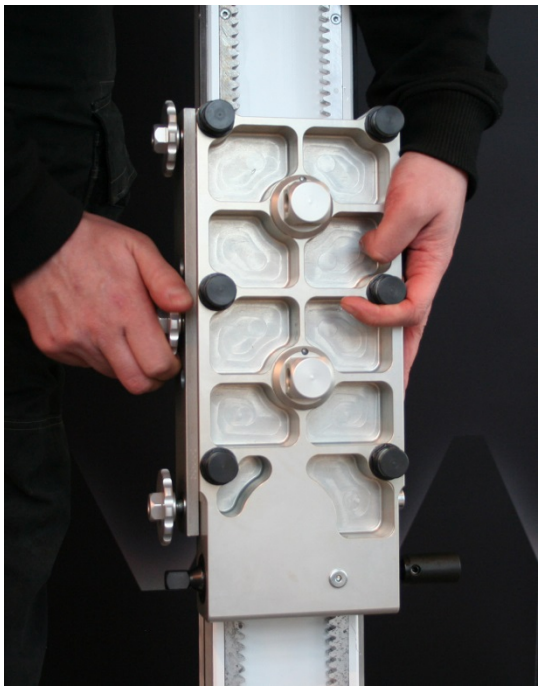
f. Next tighten the upper bolt on the back brace.

g. Tighten the lower bolt on the back brace.

2. Mount the lower carriage CEG-M25 on the track

a. Open the three clamp nuts.
b. Put the carriage on the track as shown in the picture and align the feed gear with the rack on the track.
c. Tighten all three clamp nuts firmly first by hand and then with a 19 mm spanner to be firmly tightened, but not solid.

Note! Tighten firmly, but do not over tighten!

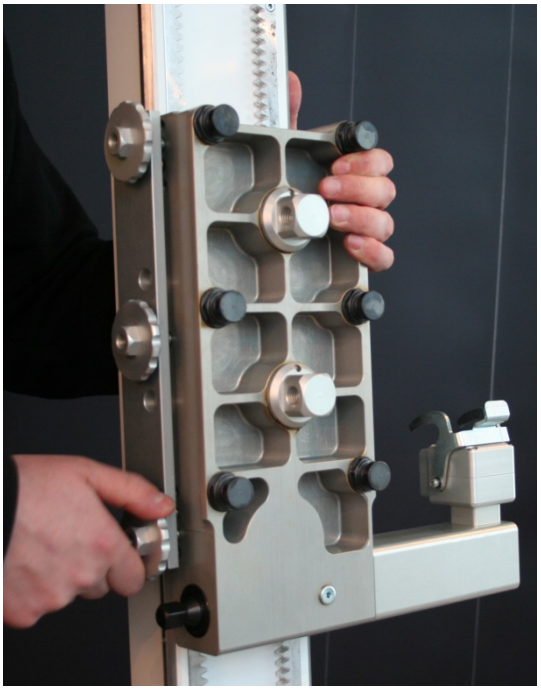


3. Mount the upper carriage CEG-E-3P8 on the track

a. Open the three clamp nuts.

b. Put the carriage on the track as shown in the picture and align the feed gear with the rack on the track.

c. Tighten all three clamp nuts firmly first by hand and then with a 19 mm spanner to be firmly tightened, but not solid.



Note! Tighten firmly, but do not over tighten!
It must be possible for the upper carriage to glide upwards during cutting.

Note! The liners on the track and the green plastic liners in the upper carriage must be clean before starting to cut. Please also smear the green liners in the upper carriage lightly with some grease or oil.

4.5 Mounting the 3P8 wire saw modules

1. Attach the lower assembly

a. Normally the lower assembly unit is mounted on the carriage with the swiveling rollers pointing towards the surface the base plate is mounted on.

b. Make sure the friction couplings / clamp nuts are tightened to avoid injuries, this applies to both carriages.

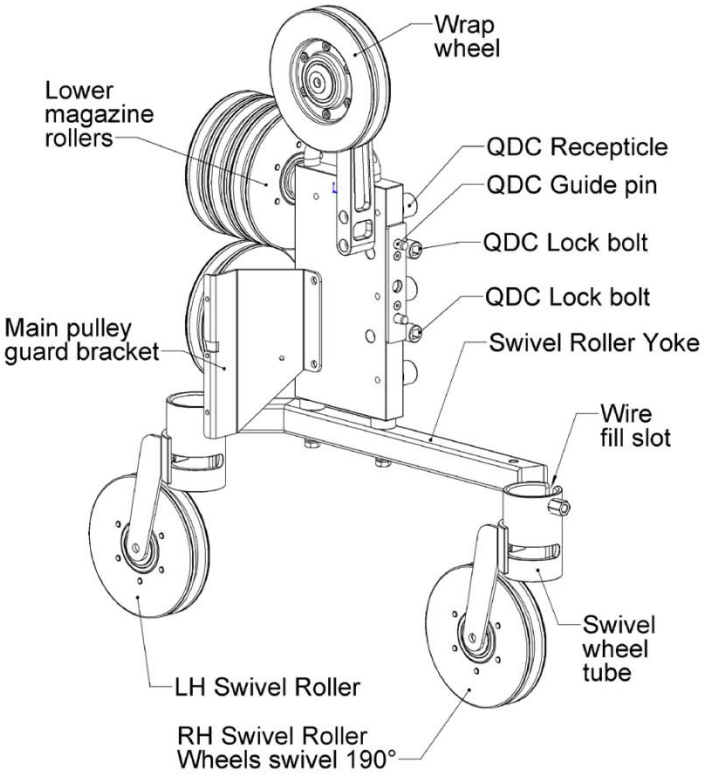
Do not over tighten the clamp socket!

WARNING!

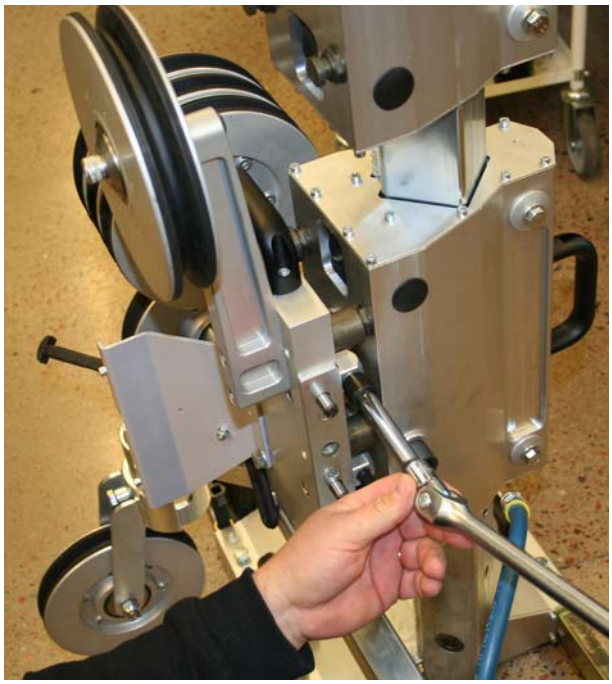
- Be careful after having mounted the carriages on the column.

c. Slide the complete lower assembly sideways with the Quick Disconnect Coupling (QDC) receptacles engaging with the locator studs on the carriage. See picture below, *"Fitting the lower assembly"*.

Note! Tighten the QDC lock bolts firmly, but do NOT over tighten! See picture below.



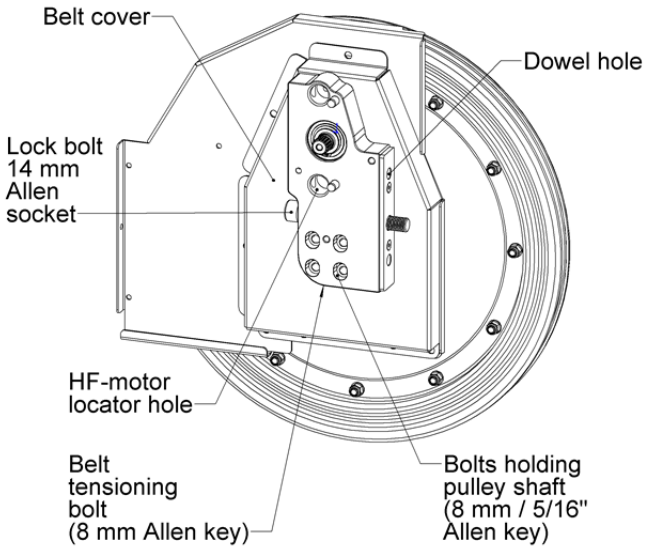
Fitting the lower assembly



Fastening the lower assembly

2. Attach the main drive pulley

a. Attach the main drive pulley on the lower assembly by mating the two dowel pins to the dowel holes in the magazine plate.
b. Tighten the lock bolt with a 14 mm Allen key socket and a long ½" extension.



Main drive pulley assembly

Fitting of main drive pulley assembly

3. Attach the main drive HF-motor to the drive pulley assembly

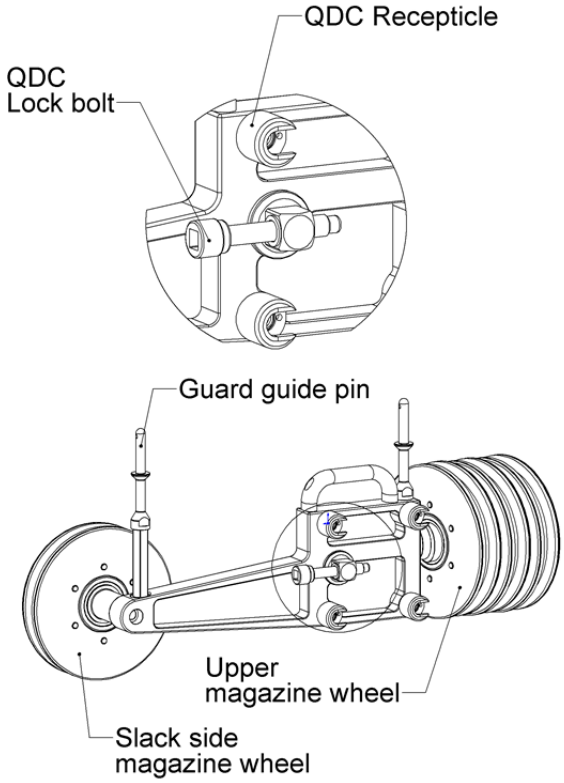
a. Attach the HF-motor to the drive pulley assembly by entering the locator dowels in to the holes in the drive pulley assembly plate.
b. Tighten the lock screws with an 8 mm allen key / 5/16".
c. Rock the main drive pulley slightly back and forth to make the spline shaft mesh with the HF-motor.

4. Attach the upper assembly

Attach the upper assembly by sliding the assembly sideways onto the locator studs on the upper carriage. Use the lower four studs.

Note! Tighten the QDC lock bolts firmly, but do NOT over tighten!

Assembly of upper magazine assembly



Quick disconnect coupling and upper assembly

4.6 Assembly of HF-motor, cords and hoses

1. Attach HF-motor cord and the 24V feed motor cord
2. Attach the main drive HF-motor cord, and the 24V feed motor cord.
3. Attach water hoses. Attach the water hoses to the power pack, the HF-motor and connect the hose from the motor bracket plate to the swivel wheel yoke.

4.7 Attach guards

After the wire has been started, very slowly, and has cut a shallow groove, the guards can be fitted.
The start-up procedure is described in 5.1.2Starting the wire.

Fitting of guard on Pentruder 3P8 wire saw.

4.8 Preparing the power pack

4.8.1 Positioning

The power pack should be positioned away from where the sawing takes place **and should be kept dry at all times**. It should preferably be placed on a flat surface.

! **Important!**

- Do **NOT** leave the power pack outside in the rain. The unit is ventilated but to prevent possible damage to electronic components we recommend that it is kept dry to prevent excessive condensation forming.

4.8.2 High voltage, low voltage and water connections

Electric power to the HF-motor (high voltage) is supplied by two 9 m (30ft) cables joined together (HF400-9-30, 400V Cable for PP427, PP422 and PP418 / HF200-9-30, 200 V Cable for PP222 and PP200).

The travel motor on the upper carriage is supplied by one smaller diameter orange colour 9 m (30 ft) cord (low voltage) packaged together with a 10 mm water hose (LV24-9-30, 24 V Cable with water hose).

Connect the water quick disconnect coupling with a 90° elbow to the water coupling on the 3P8 lower assembly.

Warning!

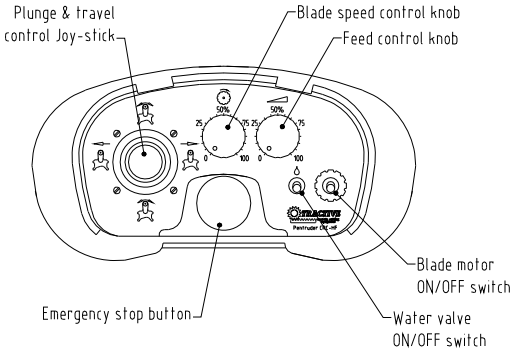
The power pack should not be connected to the electrical supply until all power cords are first connected to the saw and power pack.

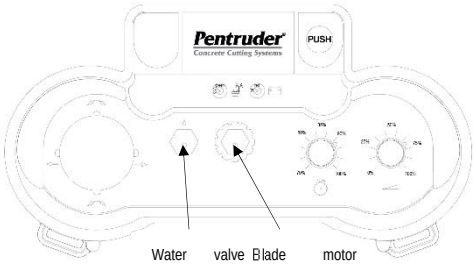
4.8.3 Connection to water supply

The power pack is water cooled and needs a minimum of 4 litres (1 gallon) of cool water per minute at full power output. The water pressure should be at least 1 bar (15 PSI) and maximum 5 bar (72.5 PSI). The water supply may only be connected to the short hose on the power pack water valve.

In sub-zero temperatures the remaining water inside the power pack cooling circuit must be blown out with compressed air.

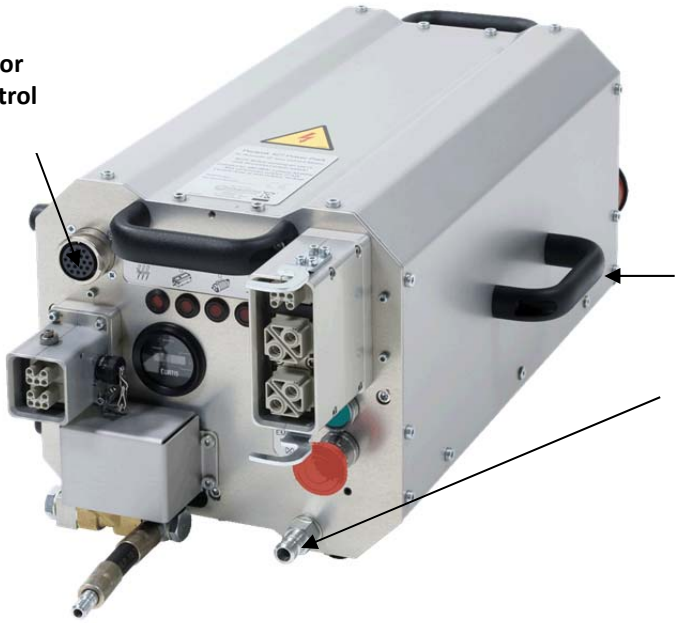
1. Disconnect the water couplings.
2. Switch the Blade motor ON.
3. Switch the water valve ON.
4. Blow out the using compressed air or an air pump.
5. Alternatively, if no electric power is available
6. Disconnect the water couplings.
7. Blow backwards with compressed air or an air pump in the coupling going to the saw head. The check valve in the water ON/OFF-valve will then open.
8. The remaining water in the power pack can then be blown out. See picture below.





! **Important!**

- Leaving water in the Pentpak in sub-zero temperatures will destroy components in the power pack and potentially cause a complete failure of all electronic equipment inside the box.
- Check at regular intervals if the water filter needs to be cleaned.


Connector for remote control
Lifting handles (3)
In sub zero temperatures, and if electrical power to the unit is not available, blow with compressed air or an air pump in this coupling to remove water from the heat sink and tubing inside the power pack.

4.8.4 Connecting remote control

Cable remote control:
The cable remote control connects to the connector for remote control on the Pentpak. See picture on previous page. The connector for remote control must be in the correct position with the notch pointing upwards for the clamping ring to close.

Wireless remote control (Hetronic Nova XL):
The receiver is fitted either on the transport trolley or directly on top of the Pentpak, see pictures below. The receiver connects to the connector for remote control on the Pentpak. See picture on previous page. The connector for remote control must be in the correct position with the notch pointing upwards for the clamping ring to close.

Receiver on transport trolley

Receiver on top of Pentpak *Connector for remote control*

The Wireless Remote Control and Receiver are pre-installed (paired together). Any new pairing of a WRC Wireless Remote Control, Hetronic, type Nova XL and Receiver type RX14-HL for use with a Pentruder machine has to be done by a workshop authorized by Pentruder and a new Installation Certificate must be filled out. See Installation Certificate on page 58.

There is a start/activating key on the side of the Wireless remote control unit (transmitter) which is used for power on/off and activation. See picture to the right.
The receiver is automatically activated waiting for the transmitter to be started.

If the use of a wireless remote control is not allowed on the worksite, the wireless remote control can be used with a cable (accessory).

More details about the wireless remote control can be found in the Appendix for Wireless Remote Control: Hetronic User's Manual.

Start/Activation key

!	**Important!**	Pull the key out of the wireless remote control when the machine is not in use, to make sure unauthorized persons cannot unintentionally start the machine.

4.8.5 Batteries for wireless remote control

The batteries should be fully charged before work is commenced.
Use only original Hetronic rechargeable batteries or three Alkaline AA batteries. Do not use Zinc carbon batteries.
The working voltage of the transmitter (wireless remote control unit) is constantly controlled. Should the battery fall below a certain state of charge, an intermittent buzzer will be heard for about 30 seconds before the system automatically shuts down.

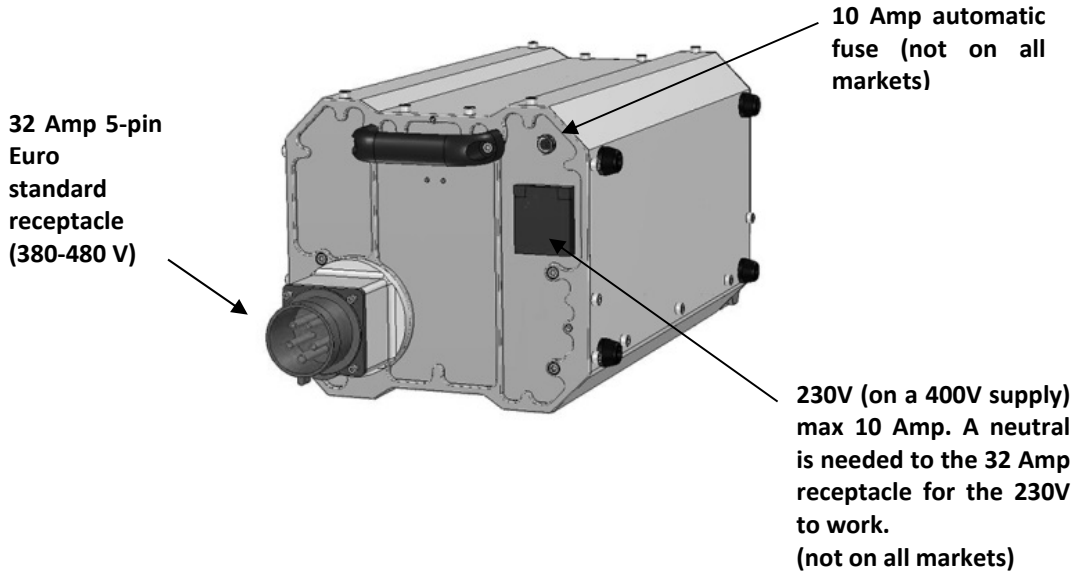
Changing and charging re-chargeable batteries:

1. Remove the battery from the transmitter.
2. Replace the battery with a new charged battery or with the cassette fitted with 3 normal AA batteries.
3. Place the charging unit on a clean and dry surface. Insert the run-down battery into the charger. Check that the battery charger is powered with the lighting up of the yellow LED on the outside. The ready green LED will start blinking as soon as the battery is charged. This typically takes 4 hours. There is also a fast charge mode to charge in about half the time (approx. 2 hours). If you press the fast charge button the yellow LED and the red LED will light up. The lifetime of the battery will be shortened if fast charge is used often. A sophisticated control system of the battery being charged means that the battery under charge can be left for as long as desired.

4.8.6 Power supply and connection to mains

PP427, PP422, PP418:
Connect the Pentpak power pack to a 5-pin 380 - 480 V 3-phase supply with minimum 16 Amp fuses.
A neutral is NOT needed other than for the 230V single phase supply.

The power pack is equipped with a 32 Amp receptacle. To use other sizes than 32 Amp plugs an adapter must be fitted.


10 Amp automatic fuse (not on all markets)
32 Amp 5-pin Euro standard receptacle (380-480 V)
230V (on a 400V supply) max 10 Amp. A neutral is needed to the 32 Amp receptacle for the 230V to work.
(not on all markets)

PP222, PP218, PP200:
Connect the Pentpak power pack to a 4-pin 200 - 230 V 3-phase supply with minimum 40 Amp fuses.

The power pack is equipped with a 63 Amp receptacle. To use other sizes than 63 Amp plugs an adapter must be fitted.

5 Cutting

First of all you have to accept you may need some time to get used to the machine. It is a little like driving a car for the first time. The systems controlling the 3P8 wire saw are automated and well refined, but some functions cannot be completely automated, and in some circumstances you have to trust your ear, and help the control a little, to get the best result. The bigger the object is, the better the 3P8 will perform. Not even heavily reinforced objects represent a problem!

5.1 Preparations before starting to cut

When all the instructions in Chapter 3 Safety instructions and Chapter **Fel! Hittar inte referenskälla. Fel! Hittar inte referenskälla.** have been followed, you are ready to start cutting concrete with the machine.

The machine should be cleaned, properly lubricated and all functions checked before cutting is commenced. See the instructions in **Chapter 7**

Maintenance**.**

Warning!

- Before cutting with the machine, it is essential that all personnel working with or in close proximity of the machine have read and understood the contents of this operator's manual and that the instructions are followed.
- If the safety precautions are not respected, this can result in serious injury and even to fatal injuries to persons in close proximity of the machine.

5.1.1 Equipment needed for cutting

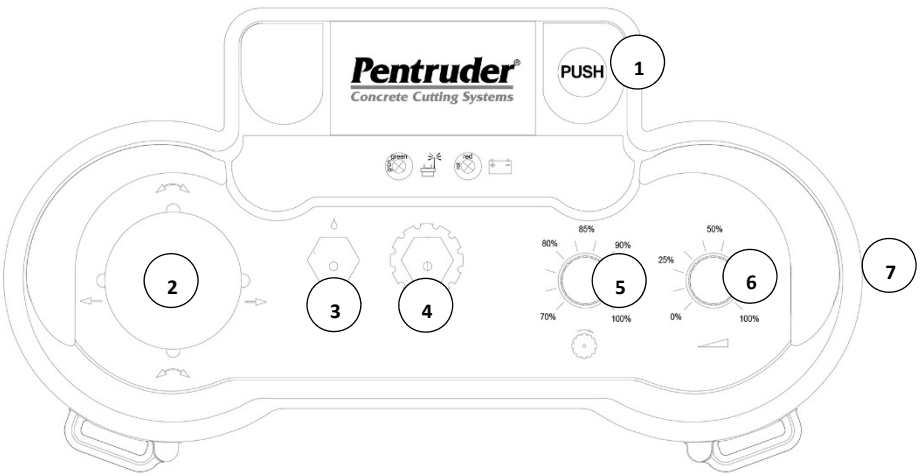
In addition to the modules of a complete machine (2.1**Fel! Hittar inte referenskälla.**), the operator should have the following material at hand:

- Safety equipment as helmet, eye- and ear protection, dust extraction equipment sensitive environments, protective clothes, shoes and gloves.
- Electrical plugs, 32 or 63 Amp, when needed, extension cables for the power pack
- Hammer drill to drill holes to secure the base plate.
- M16 HKD type or other anchors and anchor bolts to fasten the base plate.
- Hammer and mandrel for setting HKD type anchors.
- Measuring tape for positioning of base plate in relation to wire cut line.
- 7 meters, 23ft, of wire, plus what is needed to reach around the object to cut.
- Several high quality steel crimp sleeves, for the wire. Universal joints don't work well with this machine.
- Hydraulic crimp tool for steel crimp sleeves.
- Water hoses and extensions for power pack and soft thin hose for supplying water to one or several positions along the wire trajectory. Soft, flexible garden hose, 1/2" inside works well.
- T-manifolds to split water flow to several hoses.
  Industrial vacuum cleaner for collection of concrete slurry and water retention.
- Some thin 'spray on' oil or WD40 to spray on the machine before cutting starts.
- Tools
  - 1/2" knuckle bar or 1/2" ratchet, 19 mm x 1/2" socket,
  - mm allen key (for belt change)
  - mm x 1/2" Allen key
  - 14 mm x 1/2" Allen key
  - 1 x long 1/2" extension (or two short ones)
- Jobsite spare parts
- 2x Spare cog belts. Use only a Gates Polychain GT Carbon belt 720-8M GT2.
  Tractive Part No 378107202108.
- 2 x 15090100 Lock nut, guard, 3P8

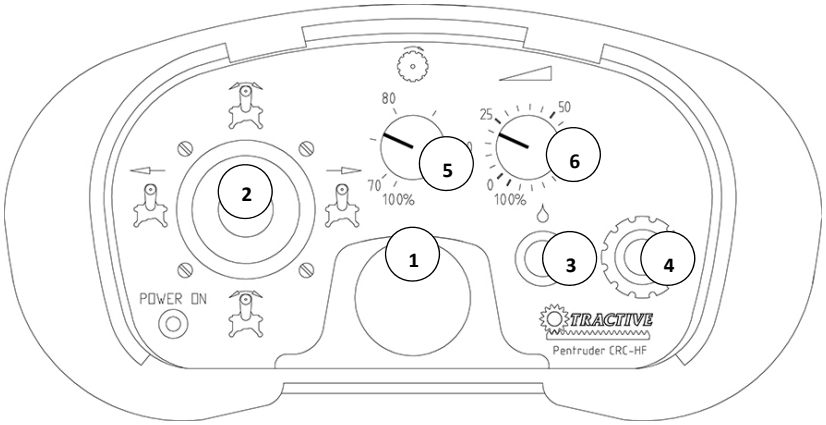
5.2 Starting the HF-machine

LED type warning lights
Connector for feed and travel motor on saw head
Coupling for water supply to the power pack
Coupling for water from power pack to hose to saw head
Connector for Emergency Stop button

Pentpak HF-power pack



WRC Wireless remote control



CRC Cable remote control

1. Emergency stop button
2. Plunge and travel control joystick
3. Water valve ON/OFF switch
4. Blade motor ON/OFF switch
5. Blade speed control knob/potentiometer
6. Feed control knob/potentiometer
7. Start key

It is not possible to control any functions on the machine unless a remote control is connected to the power pack, either via cable or the wireless remote control.

5.1.2 Starting the wire

1. Make sure the emergency stop button on the remote control is out (released position).
2. Turn the start key on the wireless remote control to pos "1". Two short beeps will follow and the green LED on the wireless remote control will start flashing. The wireless remote control is now on but not yet activated.
3. To activate, turn the start key from pos "1" to the next position (like starting a car) and release. Step b and c are not necessary when using the cable remote control.
4. Push the green start button on the Pentpak and check that the green light comes on.
5. Check that both swivelling guide wheels are tight (19 mm socket). Check their alignment with the desired cut line.
6. With the wire on the machine, and no guards mounted, and water nozzles or hoses adjusted, please pay attention to the wire tension. On the slack side there should be some slack before attempting to start

the wire. Check that the wire is run over all wheels correct and has not jumped off during the set-up procedure.

7. Test the tension by hand by moving the wire on the slack side, that is the RH side when standing in front of the main drive pulley, HF-motor pointing away from you. You should be able to move the wire sideways 10 cm or so.
8. Turn the both potentiometers on the remote control unit to their Zero position and put the switches and joystick in neutral.
9. Push the blue Switch for Water valve ON/OFF forward and hold and then, within 5 seconds, push the red HF-motor ON/OFF switch forward, and then let go of both knobs to start the wire. The wire will start rotating slowly and the water will start to flow. (We have chosen to let the cooling water from the HF-motor clean the wire before it goes into the magazine, as traction is improved when the wire is as clean as possible.)
10. If needed, the direction the wire is running in can be revered during start up. Flick the blue switch forward once, and the direction will be reversed. Flick it again and it will go the other (correct) way again. This feature is there to make it easier to cut a shallow groove on the slack side, before the real cutting starts. This function is disabled over 5% wire speed.
11. As the initial cutting progresses, and if you see slack, (not enough tension in the wire, please move Joystick UPWARDS manually, some short movements at a time, to "override" the automatic tensioning by the software.
12. Set the RH pot to 25%, and gradually increase the speed up to just a few %. Let the wire cut a shallow grove in the cut object. If everything goes well, and the wire is running smoothly at VERY slow speed, the machine can be stopped and the guards can be mounted.
13. To stop the wire, push the HF-motor ON/OFF switch forward once.
14. Mount all guards (see 4.7 Attach guards) and lock them with their respective nuts and bolts. The upper guard is held in position with the two R-clips.
15. Start the wire again by returning the LH potentiometer (wire speed control) to ZERO, and push the blue switch forward, hold it there and push the red switch forward. The wire will start again at low speed.
16. Now increase RH power potentiometer (feed and power regulation) setting to 80%. Turn the LH potentiometer (wire speed control) slowly up to 50%.
17. Again, if you see excessive slack on the slack side, move Joystick UPWARDS manually, some short movements at a time, to "override" the automatic tensioning which is controlled by the software.
18. When you consider the wire to be running smoothly, set speed and power pots pot to 100%, unless the cut object is small, then you must reduce the setting for the RH potentiometer to 25 % – max 75%.

Warning!

- The wire can break at any time, and it is rather impossible to predict when it will break. When it breaks, it will most likely be in the worst possible way, and a bead may be torn off the core wire and thrown off the wire trajectory at enormous speed.
- When the wire breaks, the wire speed will most likely be much higher than the wire speed used when cutting, as it is compounded by the whip lash effect and can reach speeds over 100 m/second. Such a "bead bullet" can kill anyone that is hit by this bullet, so all possible safety precautions must be taken to prevent a bead from flying freely around in the air.
- All guards must be fitted on the machine and properly locked while it is running and the wire must be protected by deflectors over its whole free length, as well and to the cut object.
- Do no use a too high power setting on the RH potentiometer when cutting small objects. This means high wire wear and risk for premature wire joint failure.

!	**Important!**	• The motor will be switched off automatically when the motor winding temperature is over 140°C (284°F). The coolant water should then be left running through the power pack and HF motor to avoid terminal overheating. • If the water is turned off after the motor has been switched off automatically, and when the warning light is on, terminal damage to the motor windings may occur.

⇨	**Note!**	Pay attention to water flowing to the wire. If dry smoke appears the wire can overheat and may be damaged after a short while. Readjust the hoses and / or increase water flow. Use soft garden hose and press the free end into the cut grove. Use as many hoses as possible to cool and clean the wire. A good flow of water to the wire is needed for most plastic or rubber injected wires to make them last and feel well.

Removal of concrete containing contaminated or hazardous materials may require containment of the cooling water.

Experience from running different types of wires, in different types of aggregate, steel, rock, or whatever you are cutting, will be very helpful to achieve good results. If you knew everything from the start it would be easy but less fun!

When a deep section is to be cut, most often pilot holes must be drilled. The pilot holes must then be aligned so that the cutting planes will be tapered, or the block will bind and cannot be removed.

5.1.3 Facts about the automatic tension system

- The power consumption the "feed control" or rather "power / tension system" tries to achieve is set on the right hand potentiometer on the RCU.
- To use all the power which is available, the control tries to maintain a tension in the wire that creates the resistance needed to use the power requirement set on the Remote Control Unit (RCU).
- The cutting speed is continuously variable from 0 to 22 m/second, 4330 sft/min, when driven by the 18, (25HP) and 22 kW (30HP) motors, and up to 25m/s, 4920 sft/min for the 27 kW (37HP) motor.
- If the required (or desired) power is set to 100%, the control tries to use all the 27, 22 or 18 kW available from the HF-motor.

Note! If it is a small object, with a short contact length for the wire, a setting of 100% power means that the wire must be tensioned very hard to use all the power as very few beads are in contact with the cut object, (which doesn't create enough friction). This means high wire wear and risk for premature wire joint failure. This is why the power setting should be turned down by smaller objects.

- If the wire is working over many meters contact length with the cut object, many beads are in contact with the cut object, and the wire tension will be less, to create the friction needed, and then the power can be turned up to 100% and the wire life will still be good.

Note! This means the smaller the cut object is, the harder it is to use all the power, and to achieve high cutting rates, or cut square metres per hour.

It also means the bigger the object is, (up to a certain size, of course) the easier it is to use all the power, and to achieve high cutting rates, or cut square metres per hour.

- if you see slack, not enough tension in the wire, move the Joystick UPWARDS manually, some short movements at a time, to "override" the automatic tensioning by the software.

5.1.4 Cutting of soft concrete, or concrete mixed with soft materials

Here are some tricks that can be useful in cutting soft material:

- If you see slack, (not enough tension in the wire, please move Joystick UPWARDS manually, some short movements at a time, to "override" the automatic tensioning which normally is done by the software.
- To explain the same thing with other words: If you cut very soft materials, the automatic tensioning of the wire may need some "help" from the operator, to take up excessive slack in the wire. So then you may need to keep control of the wire tensioning manually, by moving the Joystick UPWARDS some short moments at a time. If there is too much slack, you have a risk that the wire will jump off the wheels.
- Use the feed potentiometer, the one to the right on the Remote Control Unit (RCU) to reduce the tension in the wire. If you reduce down to 25% - 50%, it will still cut quickly enough in soft material.
- Most of the time you can run full wire speed, the left hand potentiometer, in soft material, but use your "feeling" also. After some time practising, you will get the "feel" for the machine. The first few days using a new machine are always a bit difficult for the operator.
- If the wire is cutting too quickly, you can have pinching of the wire, it means that the material is removed too fast, and that the wire may jam all the time. Then you must reduce the %-age on the right hand potentiometer on the RCU.
- The automatic control always tries to use the power you set the potentiometer to. Please note, if you use the 22 or 27 kW kW motors, most other compact (non-quarry type) wire saws have less than half the power, so you can reduce a lot, to below 50% and still have plenty of power available.

5.1.5 Cutting with wire under water

- Running the wire in water will cause considerable drag, and that is why a much lower wire speed normally is used under water, unless you have a very powerful machine at hand.
- On the RCU, you can set a lower speed just by turning the LH speed potentiometer down. The torque is the same from 0 rpm's and this is the key to have a good result when cutting under water. We recommend you to use no higher than around 70% of the maximum speed when cutting under water.
- The 3P8 machine has very good traction wire to drive pulley, and this eliminates time consuming under water preparation work to chamfer corners and edges the wire has to run over during start-up.
- Also, the automatic feed control adjusts itself to various conditions, it doesn't care if you run the wire fast or slow. This is a big advantage over air cylinder tension type wire saws, especially when cutting under water.
- To cut with acceptable performance under water, we strongly recommend to use at least an 18 kW (25HP) motor. For best start up and overall performance, we recommend to use the 22 kW (30HP) motor.
- If the cut is far under the water surface, the wire can be run in tubes into which air is blown, to reduce drag. Otherwise the performance will be very poor, as all power is used just to overcome drag.

6 Troubleshooting

6.1 Check list

6.1.1 The Pentpak or HF-motor doesn't start or the feed doesn't work

1. Check the LED's on the Pentpak. See LED type warning lights on the power pack.
2. Check that the fuse is ok.
3. Check that the incoming voltage is not too high or low. See **Fel! Hittar inte referenskälla.**.
4. Check that cables and connectors are not damaged-
5. Reset the power pack. Disconnect the power supply and wait 1 minute, re-connect power supply. Then press the green start button to start the power pack again.

6.1.2 The green start button on the Pentpak is ON, no indications on the LED warning lights but the machine doesn't respond to any command from the remote control.

This is one of the few cases which cannot be indicated on the LED warning lights. If possible, try another remote control. The remote control needs to be checked by the authorized Pentruder service workshop.

6.1.3 The saw stopped working

a. Please refer to the Troubleshooting Table in the Appendix for Wireless Remote Control: Hetronic User's Manual.

b. Check if the battery is completely run down.

d. If you have a CRC cable remote control available, try using the saw with the CRC remote.

e. If you have the accessory cable for the WRC wireless remote control, check if the saw works when used with the accessory cable.

6.2 LED type warning lights on the power pack

There are four red warning LED:s on the Pentpak. Below is an explanation of the respective functions.

6.2.1 LED for indication of loss of one or more phases

One blink: - - - - - - - - - - - - - - -

Loss of phase from power supply. This can be caused by a blown fuse, faulty cords, faulty plugs or receptacles, or other problems. Check fuses, input voltage, cords etc.

Two blinks: -- -- -- -- -- -- -- -- --

Too low incoming voltage. Can be caused by too long and/or too small extension cables. Check voltage, connectors, cords and generator if applicable.

Three blinks: --- --- --- --- --- --- --- ---

Too high incoming voltage. Connect only to 3-phase 380 – 480V. Check voltage, connectors, cords and generator if applicable.

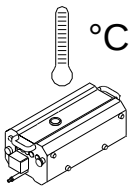
With one phase missing from the power supply, feed and travel may work, but the blade will not start.

General advice to eliminate any of the above fault conditions: Eliminate the cause of the problem, i.e. replace blown fuses, repair cords, repair or replace plugs and receptacles. If possible, test with replacing the cable.

Note!

A voltage meter doesn't always show a voltage drop in one of the phase lines because this cannot be measured without electrical load applied. A voltage meter can show normal voltage even though there are voltage losses when the machine is running.

6.2.2 LED indicating status for the Pentpak



One blink: - - - - - - - - - - - - - - -

Overcurrent alarm. May occur if the blade is jammed in the cut,
Press start blade switch to reset or unplug the unit for 60 seconds.

Two blinks: -- -- -- -- -- -- -- -- --

Unknown device connected to Pentpak. Software update needed in Pentpak.

Three blinks : --- --- --- --- --- --- --- ---

Other internal alarm for frequency inverter. Unplug the unit from the power supply, wait at least one minute and plug it in again. If the alarm has gone away you can proceed as normal.
If the alarm doesn't go away, the Pentpak needs to be checked by the authorized Pentruder service workshop.

Four blinks : ---- ---- ---- ---- ---- ---- ----

Frequency inverter alarm. The Pentpak needs to be checked by the authorized Pentruder service workshop.

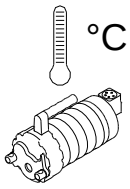
Quick blinks: ----------

Temperature in the frequency inverter has risen to a too high level. Protect from direct sunlight, increase water flow.

Continuously on: ———————————

The Pentpak is shut off due to over temperature.

6.2.3 LED indicating status for the HF-motor



Pentpak is powered, but the green start button on the Pentpak has not yet been pressed. A test is made for the digital communication to the HF-motor and the machine.

One blink: - - - - - - - - - - - - - - -
Short circuit in the digital communication system. The fault can be in the HF-motor, motor cable or inside the Pentpak.

Disconnect motor cable from Pentpak. If the alarm disappears, go on to b). If the alarm remains the same the Pentpak is faulty.

Connect motor cable again to Pentpak and now disconnect the motor cable from HF-motor. If the alarm disappears, go on to c).
If the alarm appears when connecting, the cable is faulty.

Connect motor cable to Pentpak and HF-motor. If the alarm appears when connecting, the connector on the HF-motor is faulty.

Pentpak is powered, and the green start button on the Pentpak button has been pressed.

One blink: - - - - - - - - - - - - - - -
The HF-motor ID is wrong. Nothing is broken, but the HF-motor is incompatible with the Pentpak or the machine. For example trying to use a 22 kW HF-motor with a Pentruder 6-12HF saw head (invalid combination). Another example would be that a newer model of HF-motor is introduced that didn't exist when the Pentpak was delivered. If this is the case, a software update is required.

Two blinks: - - - - - - - - - - - - - - - -
HF-motor temperature sensor in windings is not working correctly. Repair is required.

Three blinks: -
HF-motor or motor cable is not working correctly. Short circuit or open circuit. If possible, try another motor cable and/or HF-motor. If the problem remains, a repair is required.

Quick blinks: -
HF-motor temperature is high, output power is automatically reduced. Increase water flow.

Continuously on: ———————————————————
HF-motor has been shut off due to over temperature.
This can also indicate that no HF-motor is connected or that the power pack doesn't find a motor on the digital bus, e.g. damaged motor-ID chip or motor cable.

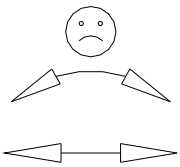
! **Important!**

- The motor will be switched off automatically when the motor winding temperature is over 140°C (284°F). The coolant water should then be left running through the power pack and HF motor to avoid terminal overheating.
- If the water is turned off after the motor has been switched off automatically, and when the warning light is on, terminal damage to the motor windings may occur.

Note!

- The outside temperature of the motor is no indication of the inside temperature of the motor. The temperature sensor is placed inside the motor windings and does not monitor the outside temperature of the motor. The windings can be working at a high temperature even if the motor is cold on the outside.
- The warning light will be off when the temperature has gone down to a temperature below 110°C. The motor cannot be restarted until the warning light goes off.

6.2.4 LED indicating status for the feed and travel drive system



Pentpak is powered, but the green start button on the Pentpak button has not yet been pressed. A test is made for the digital communication to the HF-motor and the machine.

Three blinks: - - - - - - - - - - - - - - - - - - - - - - - -

Short circuit in the digital communication system. The fault can be in the machine, 24V cable or inside the Pentpak.

Disconnect 24V cable from Pentpak. If the alarm disappears, go on to b). If the alarm remains the same, the Pentpak is faulty.

Connect 24V cable to Pentpak and disconnect machine. If the alarm disappears, go on to c).

If the alarm appears when connecting, the cable is faulty.

Connect 24V cable to Pentpak and machine. If the alarm appears when connecting, the connector on the machine needs repair.

Pentpak is powered, and the green start button on the Pentpak button has been pressed.

One blink: - - - - - - - - - - - - - -

Short circuit in the 24V cable, machine or any of the feed motors in the machine.

Two blinks: - - - - - - - - - - - - - - - - - -

24V under voltage alarm. The voltage has dropped below 18V (internally in the Pentpak). Repair at an authorized Pentruder service workshop is required.

Three blinks: - - - - - - - - - - - - - - - - - - - - - - - -

Automatic identification of machine type not working correctly.

The chassis-ID is wrong. Nothing is broken, but the HF-motor is incompatible with the Pentpak or the machine. For example trying to use a 22 kW HF-motor with a Pentruder 6-12HF saw head (invalid combination). Another example would be that a newer model /type of machine is introduced that didn't exist when the Pentpak was delivered. If this is the case, a software update is required.

Four blinks: - - - - - - - - - - - - - - - - - - - - - - - - - - - -

No digital servo found. Digital servo is defective. Repair at an authorized Pentruder service workshop is required.

Continuously on: ———————————————

The digital servo has shut off due to over temperature.

Push the emergency stop button to reset.

This can also indicate that no machine is connected or that the power pack doesn't find a machine on the digital bus, e.g. damaged chassis-ID chip or 24V cable.

7 Maintenance

For the machine to remain in a condition which is safe for operation at all times, certain maintenance is needed.
Please also see 7.3 for storage of the machine.

The maintenance in chapter 7.1 Every day / week maintenance, should be performed by the operator or a service technician.

The maintenance in chapter **Fel! Hittar inte referenskälla.** should be performed at least once per year. Follow the recommendations of your Pentruder authorized sales and service company.

If you plan to perform some of the maintenance yourself, please contact your Pentruder authorized sales and service company to get spare parts lists and more instructions.

WARNING!

No service or maintenance may be performed on the machine unless it is disconnected electrically from the mains.

7.1 Every day / week maintenance

7.1.1 Cleaning the machine, grease and lubricate and check all functions

The machine should be carefully cleaned and all functions checked and found normal before use of the machine. If a high pressure cleaner is used, the nozzle may NOT be pointed at any of the rotating parts or connectors on the machine. Tractive recommends using covers on the electrical connectors or keep the mating connector connected when cleaning to prevent water and dirt to get into the connectors.

7.1.2 Carriages

CE-1 Carriages for 70 mm column

Preload on rollers (CE-1): The roller carriage has four conical rollers to guide the carriage on the column without any play at all. Check the preload now and then. The conical rollers do not need a high preload on the column. The rear rollers can be adjusted using a ½" spanner and a 15 mm wrench.

Do not set the rollers too hard. If set to hard, the result will be premature wear of the column. Hold the eccentric shafts with a 1/2 " tool and tighten lock bolts with a 15 mm wrench. With correct preload on the rollers the carriage will run smoothly and give a very rigid support for the wire saw modules. See 4.3.2 Mounting sequence for wire saw with 70 mm column system.

CEG Carriages for TS Track

Clean and lubricate the liners.
Check the liners on the track for wear and replace if necessary.

7.1.3 Pulleys

All Ø 198 mm pulleys on the 3P8 wire saw are the same which means that they are interchangeable and all pulleys can easily be removed from their mountings. All bearings are sealed with external seals.
Replace rubber insert, bearings and seals when necessary.

7.1.4 Cog belt

The cog belt that drives the main drive pulley is a Gates Polychain GT Carbon belt. Its length is 720 mm, width 21 mm, Gates denomination 720-8M GT2.

The cog belt will last for at least 100 hours, in most cases well over 150 hours. The lifetime will depend greatly on how many times the wire jams in the cut.

Try to avoid using wires with different sizes of beads. Differently sized beads and sections of wire will cause jamming and will shorten the life of the cog belt.

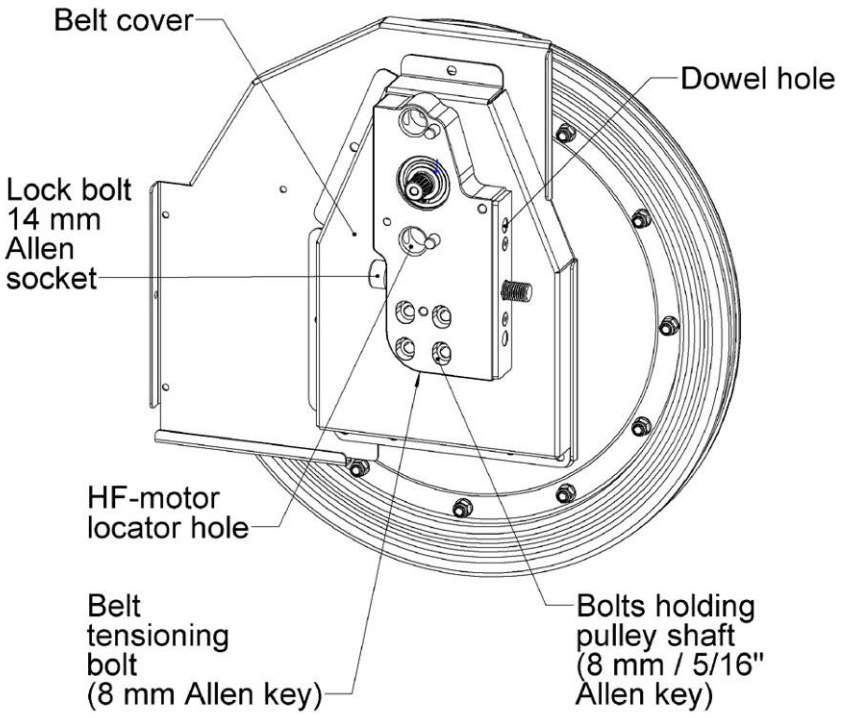
The cog belt can be replaced in about 10 minutes, after some practice. Please see the next pages for instructions how to replace the belt.

Disassembly

1. Remove the center bolt holding the pulley. 14 mm allen key.
2. Remove bearing cap and seal.
3. Remove all M6 bolts holding belt cover to back cover. 5 mm allen key.
4. Remove the belt tensioning bolt. 6 mm allen key.
5. Loosen the bolts holding pulley shaft. 8 mm or 5/16" allen key
6. Lift main drive pulley and slide it off the pulley shaft while holding back the cog belt

Assembly

1. Put a new belt on the small cog wheel.
2. Slide the main drive pulley on to the pulley shaft while at the same lifting the pulley and putting the belt over the big cog wheel pulley.
3. Push the pulley inwards while at the same time turning it to make the belt line up.
4. Tighten the pulley shaft bolts slightly.
5. Tighten the belt tensioning bolt firmly.
6. Tighten the pulley shaft bolts firmly. (60 Nm)
7. Fit and tighten bolts holding rear cover to belt cover.



Main drive pulley assembly

7.1.5 Remote control

Check the remote control for correct function.
For the wireless remote control, refer to the Appendix for Wireless Remote Control: Hetronic User's Manual.

7.2 Maintenance which should be performed by Pentruder authorized technician

7.2.1 Oil change

Oil change may only be carried out by a Pentruder authorized technician.
All oil change described below should be performed at least once per year. Follow the recommendations of your Pentruder authorized sales and service company.

!	**Important!**	Before attempting to change oil, clean thoroughly around the plug and blow with compressed air before the plug is removed. If dirt is allowed to enter the gearbox, the gearbox may seize and any warranty is void.

Oil change in worm gear transmission in feed unit or CEG Carriage
The worm gear transmission is filled with 60 ml (2 fl oz) of Omega 680 oil.

Oil change in the HF-motor high speed transmission
Unscrew the oil-plug and drain the gearbox completely. Refill with 0.235 L (0.248 quart) of **clean and preferably filtered** gearbox oil, preferably Mobil SHC 626. It must be synthetic oil with 75W viscosity. The oil must meet GL5 specifications. Clean the magnetic plug, fit it and tighten again.

Cooling housing at rear of HF-motor
Fill with 85 ml (2.9 fl oz) of Mobil SHC 626 at service.

7.2.2 Overload clutches

If any of the overload clutches have been overloaded or worn out, a Pentruder authorized technician can repair the coupling by replacing the clutch plates.

7.2.3 Digital communication connectors

All parts in the connectors are available (except remote control connector). All wires can be re-installed with standard hand tools (except remote control connector).

7.2.4 Wireless remote control

The wireless remote control should be checked at least once a year. By doing this, the life span of the wireless remote control will be prolonged. See Maintenance in the Appendix for Wireless Remote Control: Hetronic User's Manual.

7.3 Transport and storage of the machine

- Disconnect the cables from the power pack before transporting the machine.
- Make sure no unauthorized persons can get access to the machine when in transport and storage.
- If there is a risk of freezing, the machine has to be drained from water. Pay extra attention to the power pack. See 0

- Connection to water supply.
- Store the machine in a dry place, preferably above freezing temperature.
- Follow the diamond wire manufacturer's instructions for storage of the diamond wire.

8 Technical Data Pentruder Modular Rig System

8.1.1 Wire saw modules, 3P8:

Technical data for Pentruder 3P8 wire saw modules

	3P8-DP-HF Drive pulley el.	**3P8-UA Upper assembly**	**3P8-LA Lower assembly**
Weight kg / lbs:	14 / 31	15 / 33	20 / 44
Pulleys O.D. Ø mm/":	500 / 20	198 / 7.8	198 / 7.8
"Pitch Ø mm/":		180, 7.1	180, 7.1
Groove width for wire:	10 mm / 0.3930	10 mm / 0.3930	10 mm / 0.3930
Suits wire Ø mm/":	8-10 / 5/16 – 1/2	8-10 / 5/16 – 1/2	8-10 / 5/16 – 1/2
Number of wheels:	1	4	7
Storage in rollers	6.5 m / 21 ft		
Storage capacity	Maximum approximately 20 m / 65 ft		

Technical data for Pentruder 3P8 Guards

	3P8-LMG	**3P8-TG**	**3P8-DPG**	**3P8-SSG**
Weight kg / lbs:	10 / 22	10 / 22	5 / 11	7 / 15.4

Technical data for Pentruder HF-motors

	HFR418	HFR422	HFR427	HFR218	HFR222
Weight kg / lbs:	16.5 / 36	18 / 40	18 / 40	16.5 / 36	18 / 40

8.1.2 70 mm column system:

Technical data for Carriage CE1-70-3P8 and CE1-70

	CE1-70-3P8 Upper carriage (+ PT-3P8 electric feed unit)	**CE1-70 Lower carriage (+ FE1 Friction brake)**
Width incl ½" socket mm/inch	219 / 8.6	219 / 8.6
Width housing mm / inch:	150 / 5.9	150 / 5.9
Length mm / inch:	376 / 14.8	376 / 14.8
Depth mm / inch	228 / 9	228 / 9
Weight l kg / lbs:	9.3 / 20.5	9.3 / 20.5
Feed:	Electric feed unit, 100:1	Manual, Fixed with friction brake

Technical data for column CN.

	CN 0.5 F/M-70	**CN 1.2 F/M-70**	**CN 1.5 F/M-70**	**CN 0.5 F/J-70**	**CN 1.2 F/J-70**	**CN 1.5 F/J-70**	**CN 2.0-3P8**
Length mm / inch:	508 / 20	1200 / 47.2	1500 / 59	508 / 20	1200 / 47.2	1500 / 59	2000 / 79
Weight kg / lbs:	6.4 / 14.1	11.9 / 26.2	14.3 / 31.5	6.6 / 14.5	12.1 / 26.6	14.5 / 32	14.5 / 32
Coupling:	Female/Male	Female/Male	Female/Male	Female / Jack screw	Female / Jack screw	Female / Jack screw	Female/ Plastic plug
Extendable:	Yes	Yes	Yes	No	No	No	No
Fits base plates:	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC

Technical data for Base plates BE1, BE2 and BETC.

	BE1	**BE6**
Width including wheels mm / inch:	492 / 19.4	492 / 19.4 (cut outs)
Width less wheels mm / inch:	380 / 15	380 / 15
Length including support legs and wheels mm / inch:	610 / 24 with support legs in	610 / 24 with support legs in
Length less wheels, front and rear legs mm / inch:	426 / 16.7	426 / 16.7
Height not including coupling cone mm / inch:	111 / 4.4	111 / 4.4
Length / width of slot for anchoring mm / inch:	100 x 22 / 4 x 0.9	100 x 22 / 4 x 0.9
Size of wheels mm / inch:	Ø 160 / 6.3	Ø 160 / 6.3
Weight including wheels and support legs kg / lbs:	18.5 / 40.7	14.8 / 32.6
Weight less wheels and support legs kg / lbs:	12.8 / 28.2	9.1 / 20
Coupling	Fixed, front mounted	Fixed, frong mounted

Technical data for pivoting head PD1.

	PD1
Width including coupling and ½" drive socket mm / inch:	236 / 9.3
Width housing mm / inch:	106 / 4.2
Length mm / inch:	320 / 12.6
Depth incl. clamp screws mm / inch:	170 / 6.7
Weight kg / lbs:	7.7 / 17

Technical data for Carriage CEG-E-3P8 and CEG-M25

	CEG-E-3P8 Upper carriage	**CEG-M25 Lower carriage**
Weight l kg / lbs:	8.1 / 17.8	6.3 / 13.9
Feed:	Electric feed, Total gear ratio 5000:1, Max feed speed 0.4 m/min	Manual, gear ratio 25:1

8.1.3 Tracks system:

Technical data for track TS

	TS0.85	**TS1.15**	**TS2.0**	**TS2.3**	**TS3.45**
Length mm / inch:	850 / 33.5	1150 / 45	2000 / 79	2300 / 90	3450 / 136
Weight kg / lbs:	5.9 / 13	8.0 / 17.6	13.9 / 30,6	16.0 / 35.3	24.0 / 52.9
Fits base plates:	BTS3, BTS4	BTS3, BTS4	BTS3, BTS4	BTS3, BTS4	BTS3, BTS4

Technical data for BTS base plates

	BTS-4	**BTS-5**
Width mm / inch:	220 / 8.7"	280 / 11"
Length mm / inch:	320 / 12.6"	400 / 15.75"
Weight kg / lbs:	8.3 / 18.3"	13.8 / 30.4"

Declaration of conformity

According to the Machinery Directive 2006/42/EC, annex A1

The Manufacturer: Tractive AB
Gjutargatan 54
78170 Borlänge
Sweden

Person authorized to compile the technical file:
Anders Johnsen
Gjutargatan 54
78170 Borlänge
Sweden

Hereby declare that the machine:

Category:	High Frequency Wire Saw
Make:	Pentruder
Type	3P8
Drive system:	Pentpak power pack
Type:	427 / 422 / 418 / 222 / 218 / 200
Drive motor:	HF-motor
Type of drive motor:	18, 22, 27 kW HF-motor
Accessories:	As stated in this Operator's manual.

Is in conformity with the provisions of the Machinery Directive 2006/42/EC.
Is in conformity with the provisions of the following other EC-directives:

- Low Voltage Directive 2006/95/EC
- EMC-Directive 2004/108/EC

In accordance with the EC-declaration of conformity, the product must not be modified without the manufacturer's permission. If this occurs, this documented EC-declaration ceases to apply and the modifier is considered to be the manufacturer and must verify and draw up an addendum to the EC-declaration and file technical data for the inspection authority.

Borlänge 5th of January, 2013-11-05

Anders Johnsen

Technical Director

Installation Certificate

The Manufacturer: Tractive AB
Gjutargatan 54
78170 Borlänge
Sweden

Hereby declare:

- That a WRC Wireless Remote Control is installed according to the regulations in force for the machine.

Manufactured by: Hetronic

System number: 20215166371

- Transmitter: Nova XL, Production No: _____
- Receiver: RX14-HL, Production No: _____

- That the radio control interface between the machine and the receiver is suitable and has been properly manufactured according to the instructions given by the manufacturer and that all of the necessary tests have been carried out.

Signed for and on behalf of Tractive AB, Borlänge, 2015-08-27

Anders Johnsen
Technical Director

The person responsible for the installation of the WRC Wireless Remote Control:

- Will by connecting the WRC Wireless Remote Control and Receiver to a machine, as described in this Operator's manual, complete the installation described above.

- Hereby declares to have received the Operator's manual and the Appendix for Wireless Remote Control: Hetronic User's Manual and to have understood the contents.

Signature of person responsible for WRC installation

_____

Name (PRINTED), Title

_____

Place, Date

_____